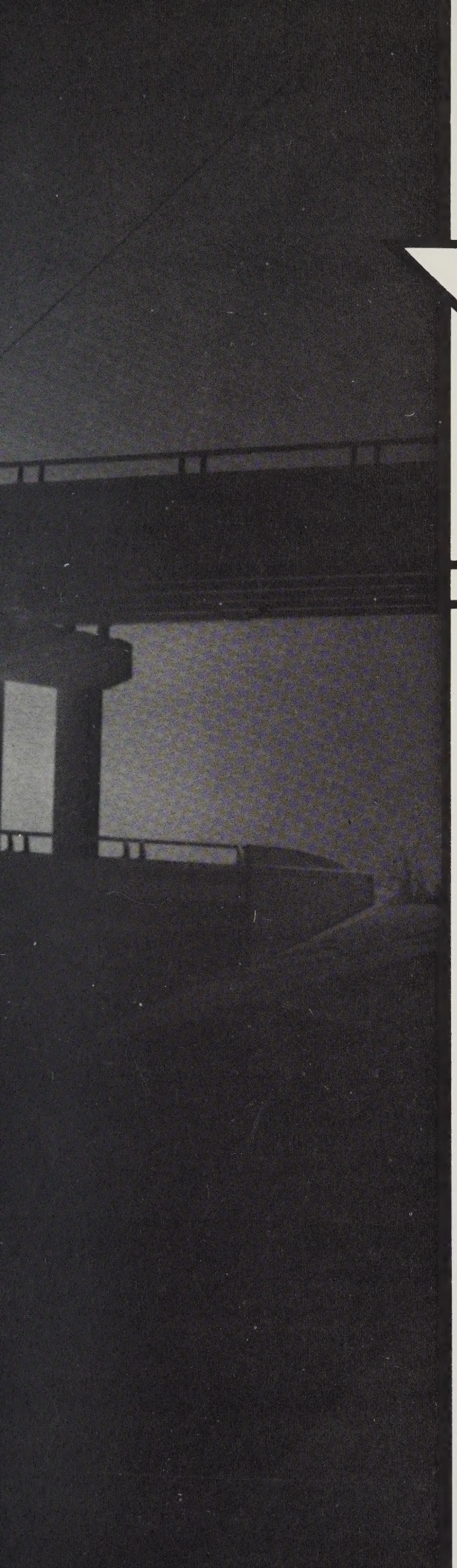
We wish you
Christmas Joy
throughout the New Year . . .

Texas Highways

December 1966

A new "star in the east" vies with the moon in this nightscape of a Fort Worth interchange. The "star" is a 100-foot, 10,000-watt experimental luminaire set up by engineers to study high-rise lighting. An article on this research begins on page 6.



Texas Highways

December 1966

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About Our Cover

The staff of TEXAS HIGHWAYS sends you greetings and wishes for Christmas cheer through the artistry of Ernest Jordan and Photographer Jack Lewis. The wintry Christmas scene is of the Kendall Inn in Boerne.

Better Highways Save Lives

Winner of the Texas Good Roads' Association editorial contest held in conjunction with Highway Week is the following editorial by Bob Miller, published in the HAMILTON HERALD-NEWS on September 22, 1966. The editorial, slightly abbreviated, appears below.

Eight miles east of Hamilton on State Highway 36 there is a sweeping curve. The highway has not yet been widened at this point. Both approaches to the curve are uphill, making it difficult for drivers going either direction to detect light beams from cars they are meeting.

The night of the football banquet in Hamilton, a steady rain was falling in this area, causing drivers to subconsciously drift toward the center of the narrow roadway rather than take a chance of dropping onto the hazardous soft shoulders. Whatever causes the accident of timing, whether it be the element of predestination as some would believe or merely the odds that sooner or later everything will happen, resulted this rainy evening in two automobiles arriving at the dangerous curve at precisely the same instant. Both drivers had allowed their cars to drift toward the hard-to-see center line. The resultant crash took the lives of two soldiers and one university student.

Eight miles west of Hamilton on State Highway 36 there is a hill which crests so abruptly that travelers who have been climbing the hill one instant find themselves going down the other side the next. A passing lane on the western incline tapers suddenly back to the narrow two-lane strip right at the top of the hill. Steep vertical embankments are on both sides of the highway, very near the roadbed, at the cut through the top of the hill.

Shortly after midnight one night last fall, a station wagon loaded with 12 members of one family sped westward toward the crest. From all indications, the father was driving his vehicle at a legal highway speed in the proper lane. Just as he reached the top of the hill, he was suddenly blinded by two sets of headlights coming directly toward him at a very high rate of speed. The grinding crash killed two of his children and his wife. Several other occupants of the two cars including the drivers suffered injuries which will plague them the rest of their lives.

Investigation seemed to indicate the driver of the auto which swerved into the wrong lane was driving at excessive speed. Apparently he was passing a truck on the incline where the passing lane exists. Sudden termination of the passing lane at the crest of the hill forced the truck driver to move toward his left. The young driver was forced to swerve squarely into the path of the station wagon.

Call it fate if you wish. Denounce speeding drivers if that pleases you. The fact is that wider, safer highways would have offered room to maneuver. In the past twelve months a half dozen other accidents in the County might never have occurred if the highways had been less slick—or straighter, or wider. Four one-car wrecks have occurred this year on a stretch of U. S. 281 north of Hamilton at times when this roadway was slick from rains. Evidence mounts that improvement of Hamilton County highways would save many costly accidents and many precious lives.

The same thing is true elsewhere. In observance of the Texas Highway Week, the Texas Highway Department and the Texas Good Roads Association are placing special stress on the notion that better highways save lives, save money and save time. The Highway Department has released data compiled during a five-year study of accidents occurring on 4,308 miles of Texas highways. The fatality rate on these highways dropped from 7.2 before improvements to 4.8 after the improvements were made. One third of the lives which would have been lost were saved by the improvements.

Texas traffic accidents took 3,000 lives in 1965, 12 of which were in Hamilton County. Residents of this area and of the state as a whole must unite in support of the safety improvement programs of the Texas Highway Department. Human life is too dear to allow the improvements to lag.

Big D Gets Biggest Contract

. . . featuring unique pylon supports in four-level, all-directional interchanges

By Tommie Pinkard
Travel and Information Division

THE FIRST TWO of seven four-level, all-directional interchanges scheduled for construction in Dallas County will be built by Cecil Ruby Company, Inc. of Austin in the most costly project ever let by the Texas Highway Department.

On I. H. 635, which is the major portion of a freeway loop on an approximate 10-mile radius around Dallas, the 4.2-mile project will cost a grand total of $15,930,578. The Texas Highway Commission awarded the contract October 28.

"Ruby's bid, $12,664,161.99 for construction, was within 4 per cent of the Highway Department estimate on the project. It is very unusual on a job of this magnitude for the bid to come so close to the estimate," commented Supervising Designing Engineer James Dunlevy. He added, "And the fact that there were as many as six bidders on a job this large is also unusual."

The Highway Department estimates that acquisition of right of way and utility adjustments will cost $2 million, and engineering, $1.3 million.

The project includes a section of I. H. 635 in Mesquite from .4 mile north of I. H. 30 to the Texas and Pacific Railroad 4.2 miles south. It is complex because it involves two full-directional four-level interchanges with Interstate highways—I. H. 20 and I. H. 30. The biggest and most expensive of the two, because of its skew angle, is the I. H. 635—I. H. 30 interchange, which highway engineers estimate will cost $2,472,900.

For its money, the Highway Department will get two intricate interchanges constructed according to a unique design concept. The two upper levels of each interchange are cantilevered from a single pylon support.

According to Dunlevy, a Bridge Division engineer who helped develop the idea, a central pylon support for multiple structures has not been used before on the Texas highway system. "And as far as we know, use of a pylon bent to support two levels of cantilevered structures is unique. We have never heard of one anywhere in the world."

"Mr. DeBerry (District 18 Engineer B. L. DeBerry) asked us to design the structures in such a way as to eliminate as many supporting columns as possible. With a four-level interchange, the maze of columns necessary for conventional designs can give the driver a feeling of claustrophobia," Dunlevy said.

"Also, with more open space under the upper levels, there is more room for the ground-level roadways," Dunlevy added.

Wayne Henneberger, engineer of bridge design, reports that the other four-level interchanges planned for Dallas County will be similar in concept. "The first two set the pattern."

The next one, to be let early in 1967, will be 5.5 miles south of the current project, at the intersection of I. H. 635 and U. S. 175. Others will be let as soon as plans are developed.

A total of 33 structures are included in the project let in October, including 26 major structures and seven culverts of bridge classification.

"Since I. H. 635 will be crossing radial highways that extend out like spokes in a wagon wheel from Dallas' central

Engineering Assistant Donald Rao begins the task of processing the 524 sheets of plans for the 4.2-mile project in Dallas that includes two four-level interchanges of Interstate highways.

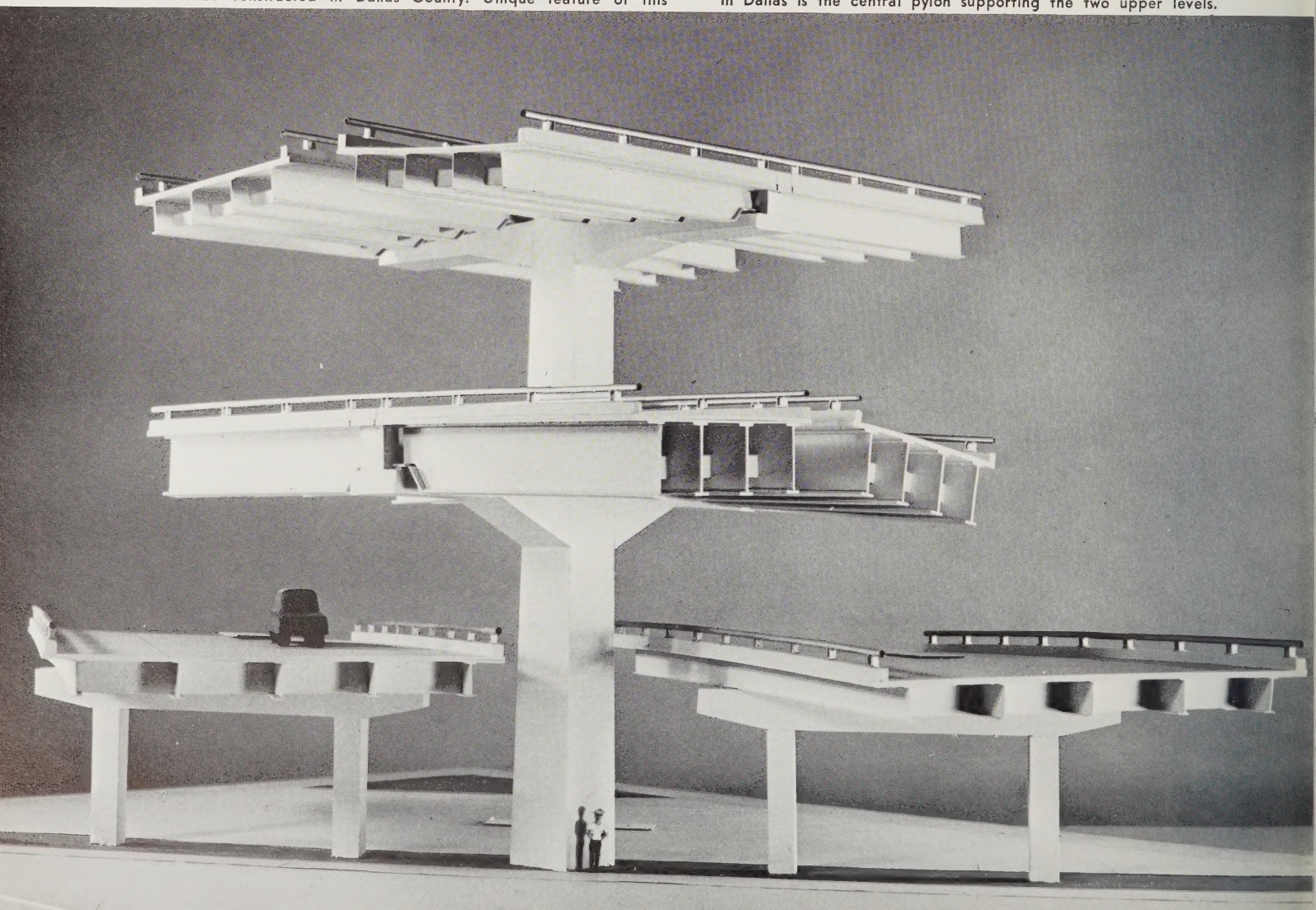
business district, it was imperative that the interchanges be designed to handle high volumes of turning traffic as well as fast-moving through traffic," DeBerry said.

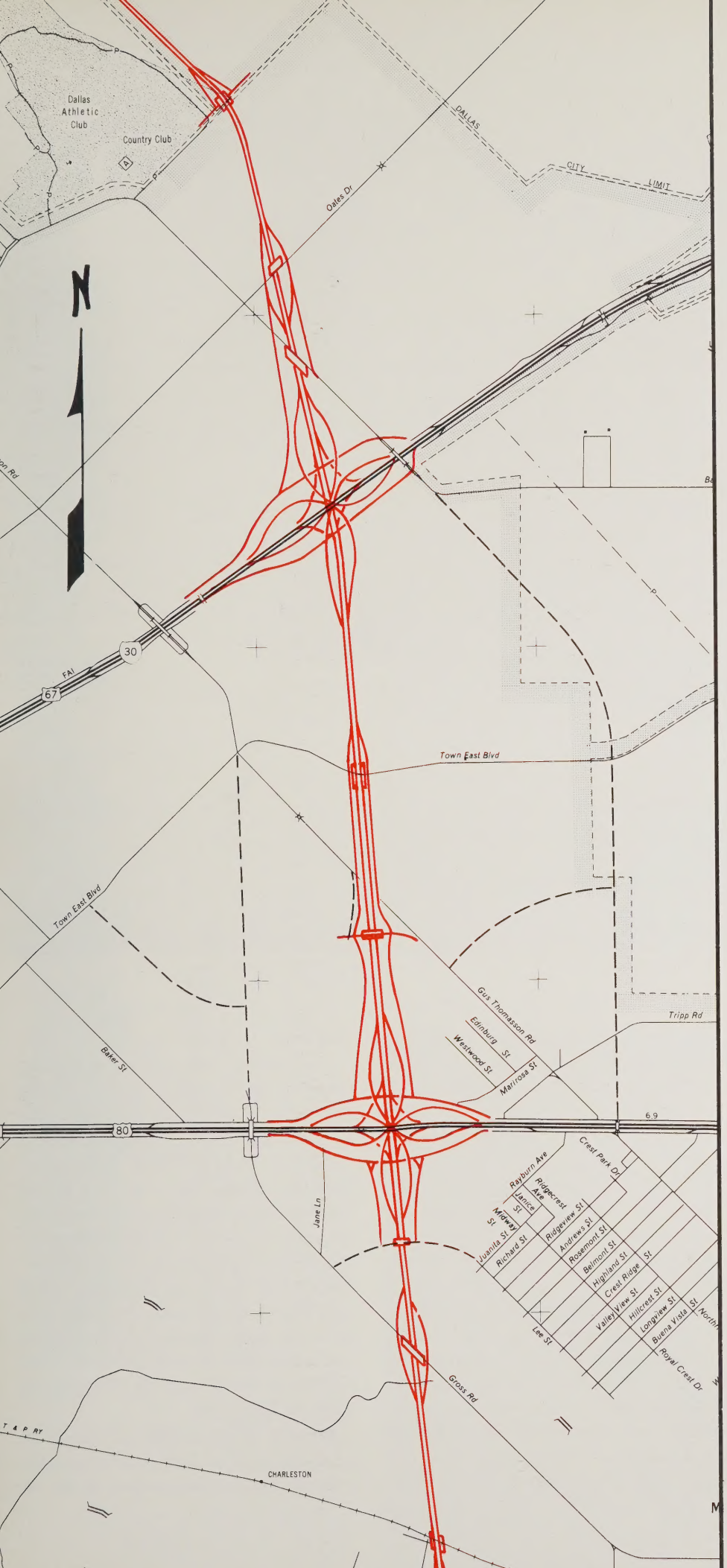
Before recommending a particular type of interchange, District 18 engineers made a thorough study of the many factors involved, such as construction and right of way costs, traffic needs, esthetics, effects on surrounding property and various cities' proposed thoroughfare plans.

"After evaluating all the information, it was decided that the all-directional design would best serve all the conditions," DeBerry said.

When approval for the four-level interchange was received, District 18 in cooperation with the Bridge Division spent many hours investigating the desirable structural and architectural design. This concerned the type of columns, beams, length of structures, grades, alignment, and a variety of other features as well as

A model of the four-level, all-directional interchange of I.H. 635 and I.H. 30 to be constructed in Dallas County. Unique feature of this structure and one to be built at the intersection of I.H. 635 and I.H. 20 in Dallas is the central pylon supporting the two upper levels.





the problem of maintaining continuous frontage roads through the intersections.

"When mutual agreement was reached on the design and other features," DeBerry continued, "it was decided the district office would handle the roadway and drainage items and prepare the bridge layout sheets for the Bridge Division in Austin, who would work up and complete the structural designs and quantities for the bridge items."

The central pylon supports at the two interchanges are each eight feet square at the base and six feet square at the top. The pylon at the I.H. 635—I.H. 20 interchange is 69 feet high, while the one at I.H. 30 is 73 feet high. The arms are inverted "T's" with three-foot wide stems on the smaller arms and four-foot wide stems on the larger arms. Depth of each arm varies, from four feet, four inches to 12 feet, 11 inches near the pylon.

An estimated 338 cubic yards of class A concrete and 92,000 pounds of reinforcing steel will go into the pylon at the Interstate 30 interchange, while 316 cubic yards of concrete and 90,500 pounds of steel will make up the slightly smaller one on I. H. 20.

Each of the connector roads supported by the pylon will be 24 feet curb to curb, with 14-foot single-lane roadways. Jiggle bars on each side of the driving lanes will denote shoulders, six feet wide on the right, and four feet wide on the left.

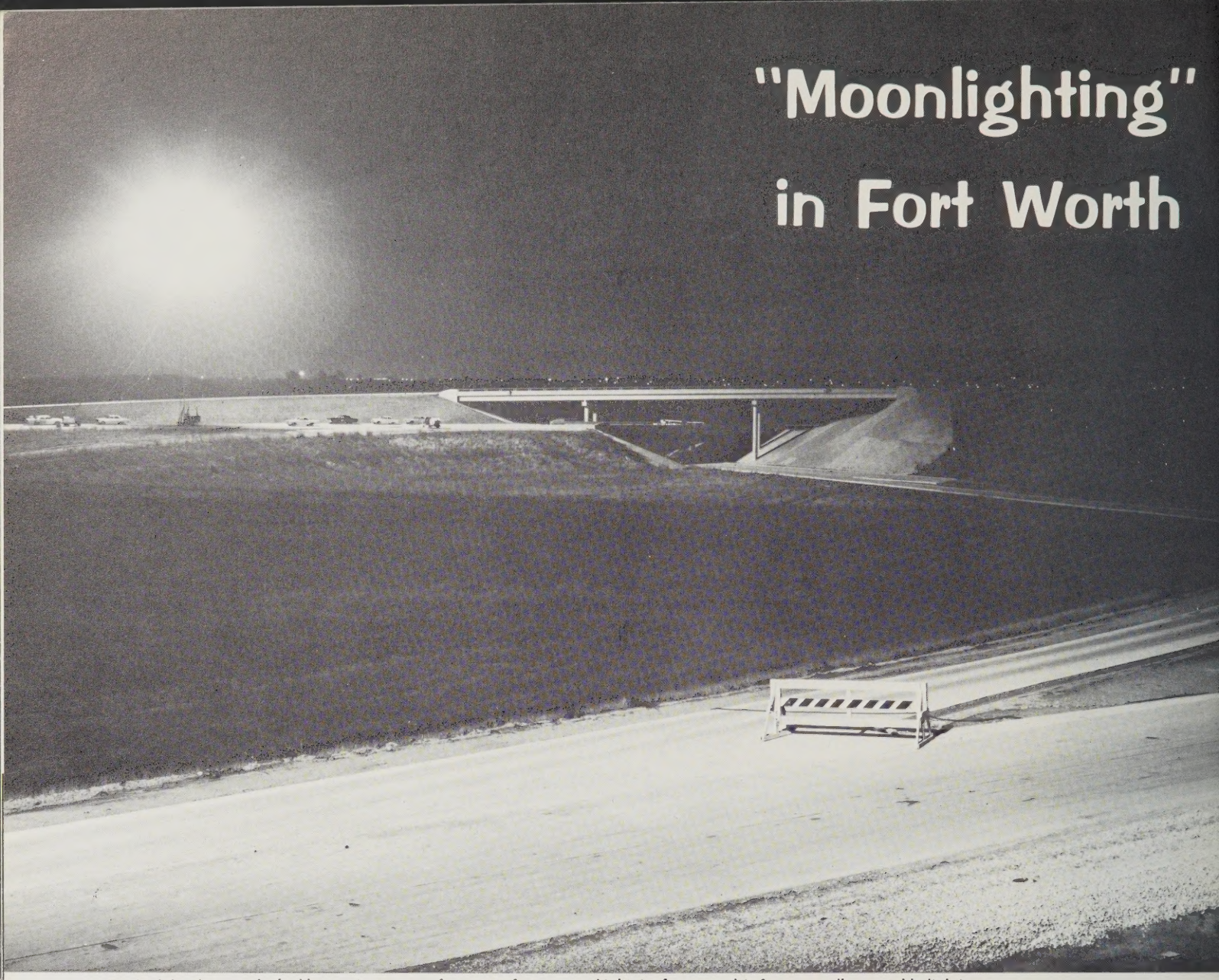
Interstate 20 and 30 will be two lanes wide in each direction where they comprise the second level of their respective interchanges with I. H. 635. There will be a 10-foot shoulder allowance on the right of each and four-foot left shoulders.

The ground level at each interchange will be I. H. 635, four lanes wide in each direction. Seventy feet across, I. H. 635 will have eight 12-foot travel lanes with 10-foot shoulders on the right and a 24-foot median with a barrier fence.

The project is estimated to take 425 working days, which means it should be complete early in 1969.

"The completed interchanges should present a pleasing and open appearance as well as being safe and adequate for years to come," DeBerry concludes. ■

"Moonlighting" in Fort Worth



The high-level tower looks like a giant moon from 900 feet away. Light in foreground is from a smaller portable lighting tower.

FREEWAY DRIVING at night may soon take a turn for the better—from the safety standpoint.

"Total visibility" is the new concept for lighting urban interchanges that will revolutionize lighting systems. Highway engineers believe that motorists driving on a freeway at night should have a panoramic view of each interchange. This will give them time to make decisions, to react to merging traffic, or to slow down for exit ramps.

Realizing that conventional methods could not achieve this new safety goal, highway engineers asked the Texas Transportation Institute to design an installation that would light a much larger area. Their answer was to make the poles higher and the lights brighter.

To find ideal placement of high-level floodlights, research engineers at TTI developed a portable telescoping tower that could be cranked up to 120 feet. With this tower, they tested luminaires at various heights.

District Engineer R. W. Crook requested that TTI research engineers test their portable light tower at the partially completed three-level interchange of I. H. 820 and I. H. 35W in Fort Worth. Near the end of September a TTI research team headed by Neilon Rowan brought the portable light tower to Fort Worth. They planned to set up the tower in the center of the interchange, but heavy rains the night before made that impossible, so they placed the tower on the northbound lane of I. H. 35W at the I. H. 820 centerline.

The lighting system used in the test project is like no other type of lighting ever seen along Texas highways. The telescoping tower was equipped with ten 1,000-watt Revere, Series 1100 (Cat-Eye) luminaires. Reflectors are elliptical parabolas, giving the outward cat-eye appearance. The ten luminaires were installed 36 degrees apart in a horizontal plane. Each luminaire was set at a 65-degree vertical angle from the tower. Total light output for the system was more than 500,000 lumens, comparable to more than 25 conventional 400-watt luminaires.

Primary object in the test was to see what diameter of light would give the motorist the panoramic view of the in-

Photographs by Jack Lewis

TTI's telescoping tower is equipped to provide two separate lighting systems. The inner circle of reflectors are porcelain, similar to those used on the "moonlight" towers in Austin. The elliptical cat-eye luminaires in the outer circle were used in the Fort Worth study.

Ned Walton, Neilon Rowan, and Stuart Williams discuss plans for setting up lighting study. Walton holds two-way radio used for communications when erecting light tower in background.

Neilon Rowan and Ned Walton of the Texas Transportation Institute, Texas A&M, take light intensity readings on pavement near the base of the 100-foot portable telescoping light tower.

terchange the engineers wanted. Second objective was to determine how many of the 100-foot standards would be needed to light the huge interchange.

Some 40 engineers, including representatives from Texas Highway Department districts 2, 14, 15, and 18, the Kansas and Louisiana highway departments, and the Bureau of Public Roads, gathered in Fort Worth to view the light tests.

District Engineer B. L. DeBerry and District Designing Engineer James Kirkpatrick of Dallas, District Engineer R. W. Crook of Fort Worth, along with several other engineers, took turns driving over freeway lanes to make sure every driver will have a panoramic view of the interchange.

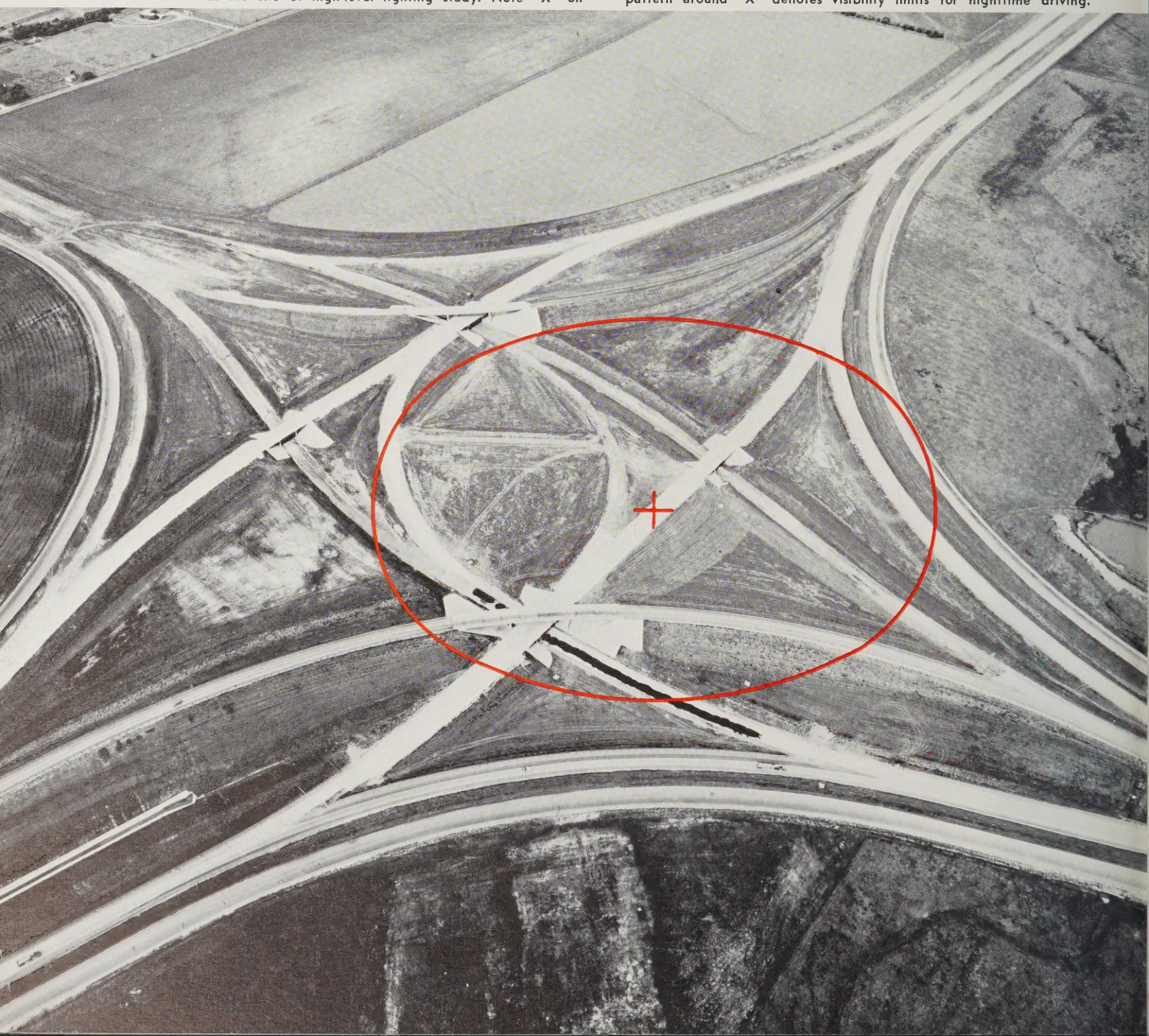
Ed Carl, engineer of surveys in Highway Design Division, said it was possible to see objects and roadway features 950 feet from the base of the tower. He said that although horizontal light readings measured zero at 950 feet, one of the engineers could read the type on a credit card.

Neilon Rowan, the man in charge of the research project at TTI and at Fort Worth, said, "The lighted area far exceeded the expectations of even our optimistically inclined researchers."

"Without exception," added Carl, "all the engineers present were pleased with the results."

Based on the preliminary findings of the Fort Worth tests, Highway Department engineers estimate they can light the interchange, which measures about 4,000 feet by 4,800 feet, with no more than 11 high-level light poles. And further, they believe pole spacings in interchanges can be more than 1,000 feet, as compared to the conventional

This interchange of I.H. 820 and I.H. 35W (lower left to upper right) in Fort Worth was the site of high-level lighting study. Note "X" on northbound lane of I.H. 35 where 100-foot tower was located. Elliptical pattern around "X" denotes visibility limits for nighttime driving.



An overpass approximately 400 feet from the base of the tower is brightly lit by the 10,000 watts on top of the 100-foot tower.

system of 200-foot spacings for 40-foot poles.

Carl said conservative estimates show the Highway Department can save at least $30,000 on installation costs to light the Fort Worth interchange with the new lighting system. Engineers compared the cost of high-level lighting to two conventional systems:

Conventional Lighting System—160 40-foot poles with 400-watt luminaires: $96,000 to install, $3,200 a year for electricity, based on one cent per kilowatt-hour.

Safety Lighting (lighting only at points of intersections, entrance and exit ramps)—50 40-foot poles with 400-watt luminaires: $55,000 to install, $1,000 a year for electricity.

High-Level Floodlighting—11 100-foot poles with 1,000-watt luminaires: $55,000 to $66,000 to install, $5,280 a year for electricity.

A prototype fixed 100-foot pole has also been developed by TTI and can be manufactured when the Department gives the word. Rowan says they were keeping maintenance in mind, too. The floodlights are mounted on a circular frame that can be lowered to ground level to make it easy for maintenance men to change luminaires and make repairs. Then, when hoisted to the top of the pole the frame automatically engages the power supply.

Design engineers are optimistic over preliminary findings of the Fort Worth study. But more studies must be made before the high-level system is written into specifications. Next target for the TTI researchers is the high speed, all-directional, four-level interchange of I. H. 610 and I. H. 10 in Houston. ■

hotograph by Automation Division

GREER DEDICATES

"SOME MEN, in striving to make sure the Highway Department gives the best, become dedicated ... driven to the task. Such a man was James H. Aiken, the Department's former district engineer for the Temple area."

Thus State Highway Engineer D. C. Greer paid tribute to the late James H. Aiken at the dedication of the railroad overpass named in his honor in Temple on October 18. Aiken, who died last January, worked long and hard to make the overpass a reality, and the people of Temple named it for him.

"As James Aiken worked toward getting Temple's much needed overpass, so did the City of Temple," Greer told more than 100 persons gathered for the dedication. "City officials and citizens provided wholehearted cooperation at every turn ... cooperation so vital to the building of any highway."

The new six-lane overpass connects U.S. 190 and S.H. 36 with Interstate 35. District Engineer Brooks Evans of Waco said there is more traffic coming out of Temple each day onto I.H. 35 than there is traveling by Temple on the superhighway.

Greer pointed to traffic problems Temple motorists have had to face in the past.

"Many of you remember—vividly—when trains on the tracks over U.S. 190 snarled traffic and exasperated drivers. A particularly long train—or a particularly slow train—could back up traffic into the business district. If there was rain, drivers had to contend with flooding at the crossing. Always there was the fear that emergency vehicles might be blocked by a train.

"Since the safety of the driving public is a primary concern of the Texas Highway Department, we take particular pride in a facility such as the J. H. Aiken Overpass. Not only will it mean safer driving for the people of Temple, but also for any motorist who visits the city. The resulting convenience and the savings in time and tempers are a bonus for the citizens of Temple.

"When Interstate 35 was built on a new location around Temple, many protested. The city had been bypassed, they said. Economic disaster was just around the corner.

"But fortunately the Department had men like Jim Aiken and the community had leaders who matched his vision.

"Now their foresight has been vindicated. This superhighway has relieved the pressure on streets and other highways in the areas. Industry has found a welcome and a home along the route.

"Interstate Highway 35 has not killed Temple. It has played a significant role in the city's development as a vital, important commercial and industrial center."

Aiken was born in Salado in 1909. He grew up in Bell County and attended

J. H. Aiken Overpass in Temple now carries traffic safely over railroad tracks. The overpass was named in honor of the late Jim Aiken, district engineer at Waco, who worked for many years to solve the difficult traffic problem.

Temple Chamber of Commerce Photograph

J. H. AIKEN OVERPASS

Mrs. James Aiken cuts the ribbon on the monument erected to her late husband. D. C. Greer spoke at the overpass dedication. The bronze plaque recognizes Aiken's contributions to "development of the network of highways in Temple and the Central Texas area."

The new overpass has six lanes, median barrier rail, turnaround lanes, lighting, and other features that should serve city traffic adequately for the next 20 years.

school in Belton. Later, he was graduated from Texas A&M University with a degree in civil engineering. His first job with the Highway Department was that of instrumentman in his home county. Then he served as resident engineer and senior resident engineer in Hamilton from 1946 to 1953.

Aiken moved to Waco as district construction engineer in November 1953. He worked as assistant district engineer and expressway engineer before he was appointed district engineer in 1962.

"Because he was a man who took satisfaction in seeing a job through, and because he had pushed hard for completion of this job, I am sure this would have been a proud day for Jim Aiken," said Greer.

"I am just as sure that it is a proud day for Jimmye Aiken, a devoted wife who understood her husband's dedication to his profession and shared his concern for his community. Certainly, it is a proud day for me ... for all of us who knew Jim Aiken."

Then Mrs. James H. Aiken, widow of the district engineer, stepped forward to cut the ribbon draped over the bronze plaque erected by the City of Temple at the north entrance to the overpass.

City Manager Keith Dodgen was master of ceremonies at the dedication. S. R. Greenwood, Temple Chamber of Commerce president, gave the invocation. Mayor Truett E. Tomlinson gave the welcome address and Reuben D. Talasek, head of the chamber highway committee, introduced special guests.

Special guests included E. B. Evans, district engineer, Waco; Tom Collier of Austin, former district engineer, Waco; C. D. Handley Jr., resident engineer in charge of the project; L. Frank Jones, chamber manager, and his assistant, Tom Popejoy.

Also present were State Senator Murray Watson of Mart, Representative Gene Fondren of Taylor, Representative Glenn Johnson and County Judge William G. Black.

Letters and wires of good wishes were sent by Governor John Connally, Congressman W. R. Poage of Waco and Texas Highway Commission Chairman Herbert C. Petry Jr.

Total cost of the J. H. Aiken Overpass, including approaches, engineering and right of way, was $1,055,000. The bridge is 590 feet long, 83 feet wide, and has six 12-foot traffic lanes. Work began on the project on April 1, 1965, and the overpass was opened to traffic in April of this year.

Temple motorists are no longer held up by trains or rain, because the overpass for which James H. Aiken worked so hard for so many years is at last a reality. ■

Fantasyland

THE CLOSEST THING to "visions of sugarplums" is a trip to Fantasyland at Joske's of Texas in San Antonio.

Planned entirely for the young and the young-at-heart is this yearly display of whimsicality where bears converse with visitors and Santa Claus bids children welcome in the language they speak—English or Spanish.

Creator of this six-year extravaganza is Wendell Potter, display director of Joske's. With the enthusiastic support of James Shand, vice president, and the artistic talents of the display staff, master-builder Potter opened the first Fantasyland in 1960. Since that time, the presentation has drawn over 200,000 visitors yearly. As many as 20,000 visitors a day have passed through this unique attraction.

This year Fantasyland has taken on a new look. Instead of the village with its animated animals, the scene is basically an array of little sidewalk shops at which snow people with animal helpers construct gifts and decorations for the Christmas season.

Potter, recalling his 18 years with Joske's, pointed out that there has always been a Santa Claus at Joske's, but the past six years have made Fantasyland synonymous with Santa to many families whether they be in San Antonio, the State of Texas, or Mexico.

"We planned Fantasyland as a service to our customers," Potter explained. "The only things commercial connected with the entire operation are the pictures which can be made of the children on Santa's lap, the train ride, and refreshments.

Boys and girls visiting this part of Fantasyland can ride Santa's train through snow-covered hills where Santa's helpers watch and wave and display signs of holiday greetings.

"The gift token which costs 50 cents actually buys toys that normally sold for one dollar in our toy store," he added. His secret for these "token" gifts is that Potter spends much of his time in January shopping Joske's Toyland for gifts reduced in price after the Christmas rush.

"It has never been our policy to make money on Fantasyland," Potter explained. "We're still operating on a non-profit basis.

"If we discontinued Fantasyland," Potter went on, "we would have the wrath of parents on our heads. This is a service parents want and expect."

The first to greet Fantasyland visitors is a bandstand filled with little snow people playing musical instruments.

Then the famous Joske original talking bear greets the children, commenting on the type of clothes, the color of hair, what they are carrying, and anything which singles the little ones out from all the others.

This famous talking bear whose mouth, arms, head and body move is Joske's electronic marvel. According to Mr. Potter, Joske's developed and displayed talking animals before the famous Walt Disney models appeared on the scene.

The talking bear's lookout post is the entrance to the world of Fantasy. Also greeting visitors are Santa and his reindeer who are getting ready for the big Christmas ride.

These cuddly mechanical mystics nod, wave, wiggle ears, lick lips, and eat from a bag. A bear shrugs his shoulders and shows his empty pockets to Santa who is ringing a bell for Christmas donations.

A pond has holes cut in the ice. Walruses in yellow raincoats and hats are fishing, and catching more than just fish!

Here, too, is a magical Santa who waves his wand, and a lighted Christmas tree rises before wondering eyes. Sure to delight visitors is the little bear who pushes a pink pie in the face of another, yet the victim bear always comes back for more.

A pretty San Antonian listens as Joske's famous talking bear tells about Santa Claus. The bilingual bear welcomes children to Fantasyland in English or Spanish, commenting on their clothes, color of hair, what they are carrying—anything that singles them out from all the others.

Standard features of Fantasyland back again this year are the fantastic Santa's Train, the surprise gift box, refreshment stand, and all of Santa's girl helpers.

Inside Fantasyland resides Santa Claus just waiting to listen to young wishes. Although more than one Santa is present, the visitors are taken through a maze in which they only see the one great Santa Claus. Santa stays every shopping day until the nine o'clock closing hour.

But just as imaginative is the entrance Santa makes to Joske's. This year on November 18, Santa arrived in a massive balloon which floated down from the top of the store. Giant searchlights showed him landing on a platform and distributing balloons to the children below.

Then, to open Fantasyland officially, he again boarded his balloon, flew back up to the roof and came down through a door onto the fourth floor. This procedure gave the children time to race through the store, ride the escalators to the fourth floor and be there to witness

Photographs courtesy San Antonio Chamber of Commerce

Seals in bright yellow raincoats fish through holes cut in the ice. Children watching the fishermen will see them land baskets of goodies as well as green fish.

Santa's entrance into the land of make-believe.

Plans for Fantasyland are made more than a year in advance. In June, the crew begins full-time work to be ready for the great opening in November.

Designing the machinery to operate the animals flawlessly and quietly, yet to be contained in the smallest amount of space, takes mechanical wizardry. Mr. Potter boasts of the most versatile display crew in the Southwest.

Framework for this year's display is of aluminum. Plastic paneling is attached. Miraculous things are accomplished with tissue paper and paint to achieve the effect of a fairyland castle throughout the entire area.

The imagination of Wendell Potter and his ability to transform this dream into reality has created a dream world of Santa Claus for thousands of youngsters who look forward to their yearly trip to Fantasyland.

The new displays give parents an opportunity to see mechanical genius at work. Why do the children demand repeat performances and get them? The expressions on their shining faces when they view the splendor created especially for them is reason enough even for the meanest of Scrooges. ■

Boyd Nominated Secretary of Transportation

PRESIDENT JOHNSON has nominated Alan S. Boyd, currently undersecretary of commerce for transportation and former chairman of the Civil Aeronautics Board, as the first secretary of the new Department of Transportation.

The President signed into law in October a bill creating the Department. It will bring 31 agencies and bureaus under its direction.

The department will have three major operating administrations — highway, rail, and aviation, headed by a Federal Highway Administrator, Federal Railroad Administrator, and Federal Aviation Administrator, respectively.

The present office of Federal Highway Administrator, now occupied by Rex Whitton, will be continued under the title of Director of Public Roads. Whitton will report directly to the new Highway Administrator who will be appointed by the President.

The Secretary of Transportation will be assisted by an undersecretary, four assistant secretaries, a general counsel and an assistant secretary for administration. The Secretary of Transportation and the three administrators will be appointed by the President and approved by the Senate.

The Federal Highway Administrator will supervise the activities of the Bureau of Public Roads, the Traffic Safety Bureau, and the Highway Safety Bureau. President Johnson has combined the last two bureaus under Dr. William Haddon Jr. Dr. Haddon has already been confirmed as Traffic Safety Director by the Senate.

A provision was written into the new bill to prevent diversions from the Highway Trust Fund to subsidize other modes of transportation. The Department's annual expenditures are estimated at approximately $6 billion, more than 65 per cent of which will derive from the Highway Trust Fund.

In signing the bill, President Johnson outlined some of the objectives for the Department of Transportation:

"During the next two decades, the demand for transportation in this country will double. But we are already falling behind. Our lifeline is tangled.

"We are confronted by traffic jams, by commuter crises, by crowded airports and crowded air lanes, screeching airplanes, archaic equipment, safety abuses and roads that scar our nation's beauty.

"Because the job is great, I intend to appoint a strong man to fill it. The new secretary will be my principal adviser and strong right arm on all transportation matters. Among the many duties the new Department will have, several deserve special notice.

"—To improve safety in every means of transportation, our automobiles, our trains, our planes, and our ships.

"—To bring new technology to every mode of transportation by supporting and promoting research and development.

"—To solve our most pressing transportation problems.

"Our transportation system was built by the genius of free enterprise. As long as I am President, it will be sustained by free enterprise."

An independent National Transportation Safety Board will be established in the Department to determine the causes of transportation accidents. It will initiate on its own motion or conduct rail, highway or pipeline accident investigations and exercise powers and duties relating to aircraft accident investigations. ■

EL PASO TESTS EPOXY ON

THE WIDESPREAD PROBLEM of bridge deck repairs has not bypassed the El Paso district.

Shortly after the load limit on state highways was raised from 54,000 to 72,000 pounds in 1960, extensive bridge deck cracking began to appear. We made extensive repairs to one structure with several different materials to find out what might be done to prevent further deterioration.

Results of our initial study showed that Guardkote 140, a black coal tar extended epoxy, was helping to hold our problem bridge together. Based on this project, we decided to select a structure in the early stages of stress to see if an epoxy surface would prolong its life. We also decided to contract repair work for more accurate accounting of State costs.

Our first project had included a large amount of Shell Oil Company epoxy, so we asked that company for assistance. We drew up specifications and plans that called for two types of epoxy to be applied as a seal coat in one area and an overlay on another. This would give us an experimental project comparing a seal coat and an overlay using black coal tar extended epoxy Guardkote 140 and clear oil extended epoxy Guardkote 250 on identical structures under almost identical traffic conditions.

Twin structures on Interstate 10 of the Fort Bliss spur in El Paso were selected for the project. The overpasses were built in 1960 and are single unit continuous steel beam spans carrying 40,000 vehicles a day. Each structure is 52 feet wide from face to face of curb and carries three lanes of traffic. Both bridge decks are in good structural condition. Some leaking cracks appeared in each bridge but there are more in the eastbound structure than the westbound. This may be because of three concrete plants located east of the structures whose loaded vehicles are westbound. This seems to be the only variable factor.

The Guardkote 140 was used for seal coat and overlay application on the westbound structure, and Guardkote 250 was used on the eastbound. The east half of each bridge received a seal coat of approximately 3/16-inch thickness, and the east half of each bridge received a 3/8-inch overlay.

Sentinelkote Corporation of Chicago, a company having considerable experience with epoxies, was awarded the contract for repairs.

Because posted speeds ranged from a maximum of 70 mph to a minimum of 50, the contractor had to hire an off-duty policeman to direct traffic. We used regular maintenance signs with 24-inch cones and supplemental flagmen. There were no accidents, but there were many near misses.

One-fourth of the bridge was repaired at a time. Larger cracks were routed with a homemade rig built by Sentinelkote. The machine could rout up to 10 feet a minute with no difficulty.

In preparation for the seal coat, the deck was swept thoroughly and just before application it was blown clean by an air compressor. Guardkote 250 was applied at about three pounds per square yard. The epoxy consisted of five gallons of resin component and five gallons of catalyst component mixed with a special paddle arrangement attached to a 12-inch electric drill. Mixing took about two minutes.

The epoxy leveled up in one to five minutes and then sand was applied for a wearing surface. About 25 pounds of sand per square yard gave a seal ap-

Vibrating screed at work with Guardkote 140 overlay.

BRIDGE DECKS

Leroy J. Wallen, Senior Traffic Engineer
El Paso, District 24

proximately 3/16-inch thick. The weather cooperated with a warm 96 degree air temperature, but the bridge deck was 150 degrees. The Guardkote set up almost before sand could be deposited on it and the sand application had not been properly developed, so that the first area left much to be desired in looks. The next day this was given a second coat of epoxy and sand.

Guardkote 140 was applied as a seal coat in the same manner and same proportions. The black material is easier to see on the bridge and the surface looks better than the one with clear material. Working time with clear epoxy is longer, but only time will tell which is the better material.

Next, we applied the Guardkote 250 overlay. Preparation of the surface was the same as before except it was not necessary to fill routed cracks before the overlay. In the seal coat operation, the cracks were filled first to prevent "reflection" of the cracks.

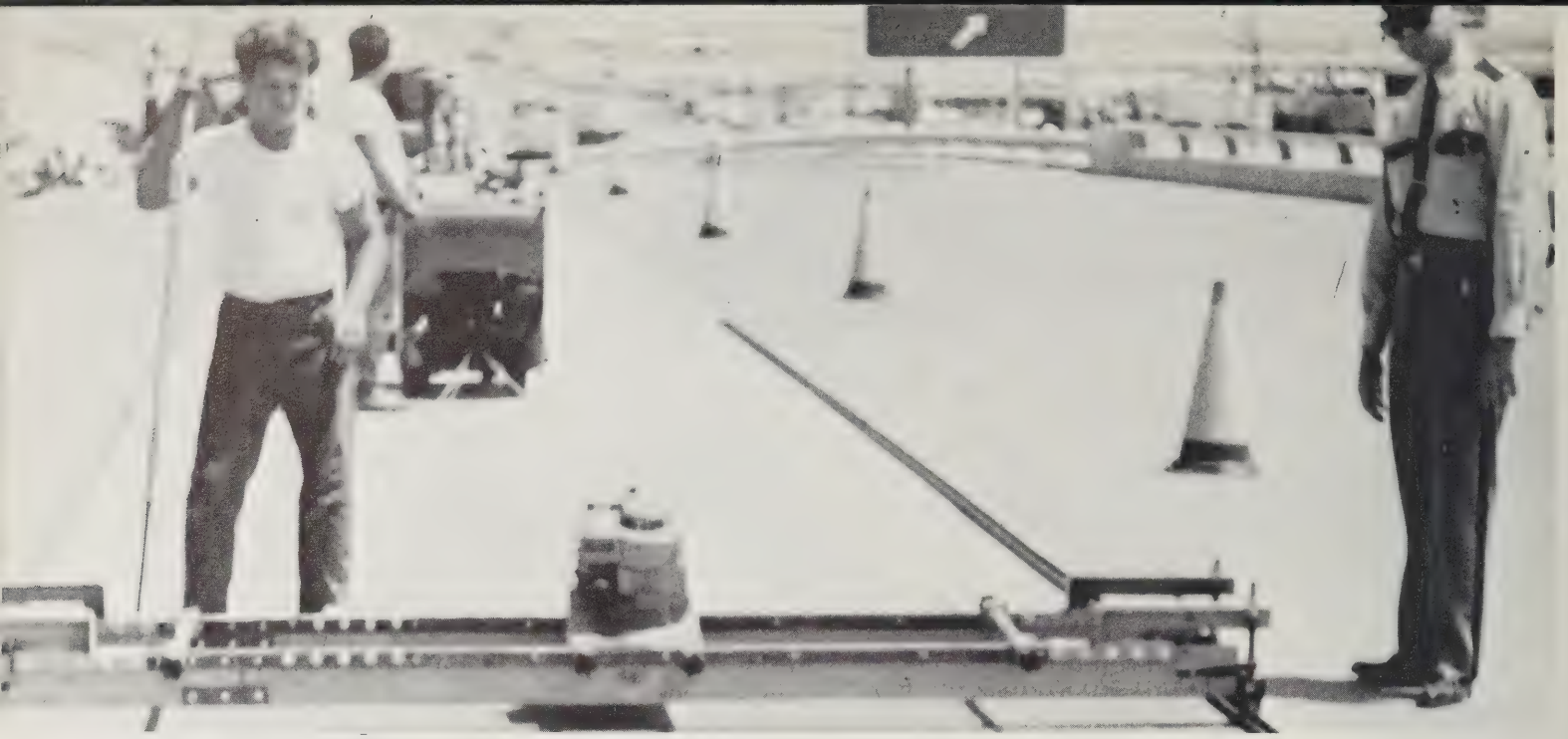
This time we had to lay rails for a vibrating screed. The screed was 10 feet wide and had a four-inch metal plate on the bottom. Two small steel channels, serving as line and grade, acted as tracks for the vibrator wheels. The screed was adjusted to provide a finished 3/8-inch overlay.

Five gallons each of the resin and catalyst components were mixed for two minutes and then dumped in a plaster pug mill with 560 pounds of concrete sand that had 1/4-inch aggregate removed. After two or three minutes in the pug mill, the epoxy mortar was transported to the bridge deck by wheelbarrows. The vibrating screed smoothed out the mixture at approximately three feet per minute. Each lane, about 150 feet long, was laid in one hour.

After applying the Guardkote 140 to the final section of the bridge, we found

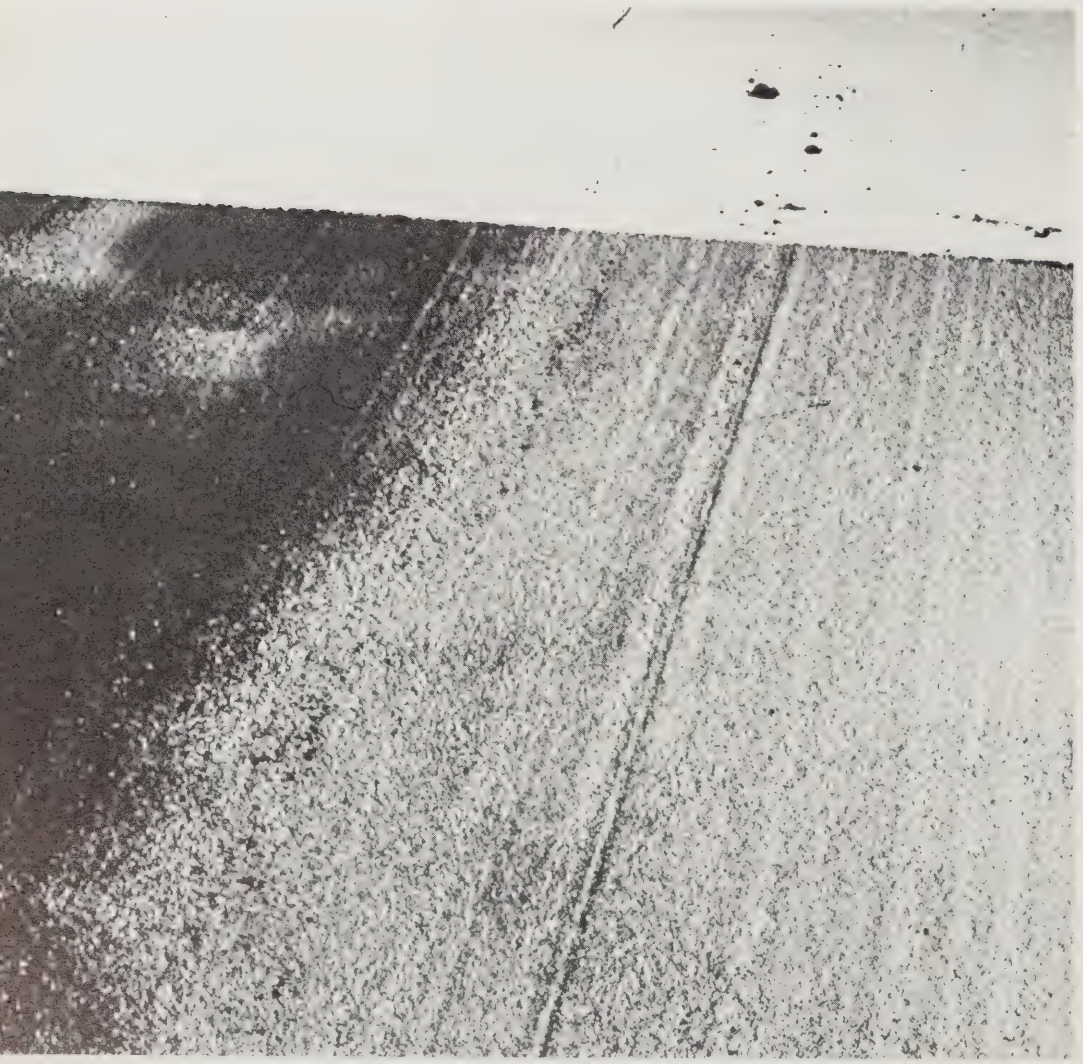
Epoxy, consisting of five gallons of resin component and five gallons of epoxy, is mixed with a special paddle arrangement attached to 12-inch electric drill.

Concrete saw connected to screed by chains provides uniform forward movement of screed.



Last pass on application of Guardkote 250 overlay.

Ridges in overlay are caused by uneven movement of screed.



that the clear overlay had required about 50 pounds more sand than the black. The black material is stickier and produces more drag on the screed. Several ridges appeared in both the 140 and 250 material, but they have not caused any traffic problems.

Curing time before opening the lanes to traffic ranged from two to six hours, depending on air temperature.

Each of the four applications covered 850 square yards of deck. The only pay item was the epoxy seal or overlay. Routing, cleaning, and handling traffic were subsidiary items of work. Bid prices were as follows:

Oil extended seal	$4.30 per square yard
Oil extended overlay	4.35
Coal tar extended seal	5.46
Coal tar extended overlay	6.36

We are happy with all portions of this project. The coal tar extended epoxy seal looks better than the oil extended epoxy seal, and the oil extended overlay looks better than the coal tar overlay.

After a year, we will be able to tell if there is any appreciable difference in the looks of these materials and whether the additional cost of the overlay is justified. Right now it appears the oil extended epoxy overlay, Guardkote 250, is the best application. ■

Brady Gentry Dies

BRADY GENTRY, 1895-1966
Chairman, Texas Highway Commission, 1939-1945

FORMER CHAIRMAN of the Texas Highway Commission Brady P. Gentry of Tyler died on November 9 in a Houston hospital following a lengthy illness. He was 71.

Appointed to the Highway Commission in 1939 by Governor W. Lee O'Daniel, Gentry was the first to serve as chairman for his entire six-year term.

Gentry came to the Highway Commission unusually well qualified. He had served eight years as Smith County judge, and had been instrumental in providing Smith County with a fine system of lateral roads. His work in improving the financial standing of the county during his tenure as judge was outstanding.

During his term as Chairman of the Highway Commission, Gentry took an active interest in all functions of the Highway Department and made it a point to visit every county seat in Texas. Because of this, he was one of the most widely known commissioners.

"He was an outstanding highway commissioner," says John Nations, Director of Equipment and Procurement. "And I never had a friend I liked better or respected more in my whole life."

While Commissioner, Gentry served as president of the American Association of State Highway Officials in 1943.

It was under his leadership that the Texas system of farm to market roads was established.

State Highway Engineer D. C. Greer, who was appointed to his post during Gentry's term as chairman of the Commission, considered Gentry a close personal friend.

"He was the most astute and well-informed person about highway matters when he was in Congress and when he served on the Highway Commission. He had a tremendous insight into Highway Department problems, and he had the intelligence and drive to work them out. His death is a great loss to Texas and to the nation," Greer said.

After his term as chairman of the Commission, Gentry returned to private law practice in Tyler. In 1952, he was elected to Congress to represent the Third District (Tyler). He served two terms in Congress, and was a member of the Committee on Highways and Roads.

Gentry was born on a Van Zandt County farm on March 25, 1895. He was educated in the public schools and was admitted to the bar when 21 years old. He served with the American infantry in Europe during World War I, and was discharged with the rank of captain. After the war, he re-entered the practice of law in Tyler and began his public career there when he became assistant city tax collector.

In Congress, Gentry preached governmental economy and was opposed to foreign aid on the scale proposed by the national administration. His colleagues regarded Gentry as one of the most unorthodox politicians in Congress. By all standards, his vote against many popular measures would be expected to cost him much of the support of his constituents, but he won re-election by a comfortable margin.

Just before his retirement from Congress in 1956, Representative Clark Fisher of San Angelo described Gentry as "the most interesting person I have met in Congress during the 14 years I have served." Fisher added Gentry had "never been a party hack or a narrow party liner, but always put the good of his country ahead of political considerations."

In 1957, Gentry was again appointed to the Texas Highway Commission, by Governor Price Daniel. In announcing his selection, Governor Daniel said Gentry "is recognized throughout the nation as one of the outstanding authorities on highway matters." Daniel added Gentry's experience "gives him a knowledge of both state and federal highway legislation which will be of great value to Texas in this new and unprecedented period of highway development."

Gentry, however, resigned this appointment because of the press of business and personal affairs.

Throughout his adult life Gentry considered Southern Methodist University *his* school even though he never attended SMU. He was an active supporter of the athletic program, especially the basketball team. He was also a benefactor of Tyler Junior College.

"Although he never had any children of his own, there are many, many young people, both boys and girls, who owe their college education to Brady Gentry," says John Nations. "He not only sponsored them financially, but was always ready to give them the advice and support they needed."

On learning of Gentry's death, Ray M. Keck Jr., president of the Texas Good Roads Association said, "Brady Gentry was one of the most influential and knowledgeable friends Texas highways ever had. This was demonstrated during his service on the State Highway Commission, in Congress, and later as a director of the Texas Good Roads Association." ■

Cleaning Up in District 18

WHETHER it's mowing the right of way or picking up litter, District 18 has a machine to make the job easier, faster, and safer.

Last year the district purchased the "spider" mower for mowing the steep slopes of expressway right of way. This past summer the district got two litter pickers, or turf sweepers, to cut litter-picking time.

District Engineer B. L. DeBerry reports that a man running the litter picker can clean from six to 10 acres a day. The machine picks up paper, bottles, cans, grass cuttings and boxes while operating on slopes up to 4 to 1. A small amount of hand picking is all that is necessary between machine operations.

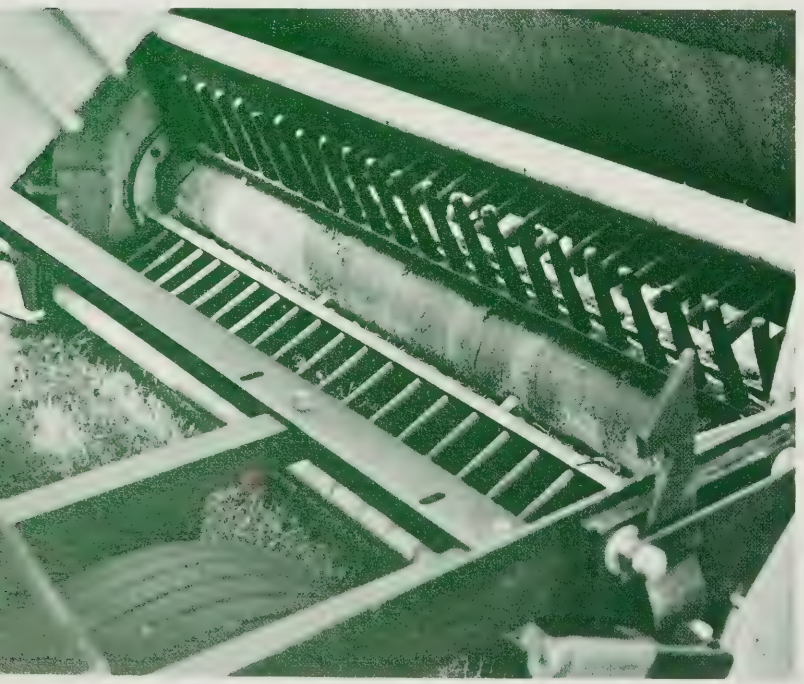
Long rubber "fingers" attached to a rotating drum sweep trash into a five-cubic-yard hopper. Although the picker is tractor pulled, the rotating drum is powered by a small gasoline engine that maintains constant speed no matter what the speed of the tractor.

DeBerry says there are a few drawbacks to the sweeper: It works best when the grass is dry and fairly short, although

The "spider" mower in District 18 snakes around signs (above), or climbs steep slopes (right) to get at grass along expressway right of way.

Photographs by Marvin Bradshaw, District 18

A litter picker (above) has five-cubic-yard capacity. Firm rubber "fingers" (below) pick up cans, bottles, paper, and grass cuttings.



it has been operated in grass as deep as eight inches; the hopper must be emptied when it is about half full for efficient operation; and the machine does not operate satisfactorily on steep slopes.

The "spider" mower has some distinct advantages over previous mowers. It has a low center of gravity so it won't tip over easily, a four-wheel drive for more traction, a swivel frame for maneuverability, a seven-foot rotary mower mounted in the front so the operator can steer the mower, and large tires to prevent damage to slopes.

No matter how steep the slopes, the driver's seat always remains level. When the operator gets off the seat, the engine dies instantly and the machine locks in gear.

DeBerry claims that with more miles of expressways being built in his district, the litter pickers and "spider" mowers are helping the maintenance section clean more area with less manpower. ■

seen any odd rocks lately?

Part of John Cumbie's colorful rock collection—note duck-shaped rock leaning against the wall.

J. J. Cumbie has picked up some pretty odd things in the last three years.

But that's not bad. Cumbie used the things he collects to enhance the cactus and rock garden at the maintenance office in Dickens, where he presides as maintenance foreman.

It started three years ago when the Highway Department built an office and warehouse building in the southwest county of District 25. Cumbie decided to landscape the front of the building with items typical to West Texas. Although he will pick up just about anything beside the highway that looks interesting, his collection is mainly of attractive or odd-shaped rocks.

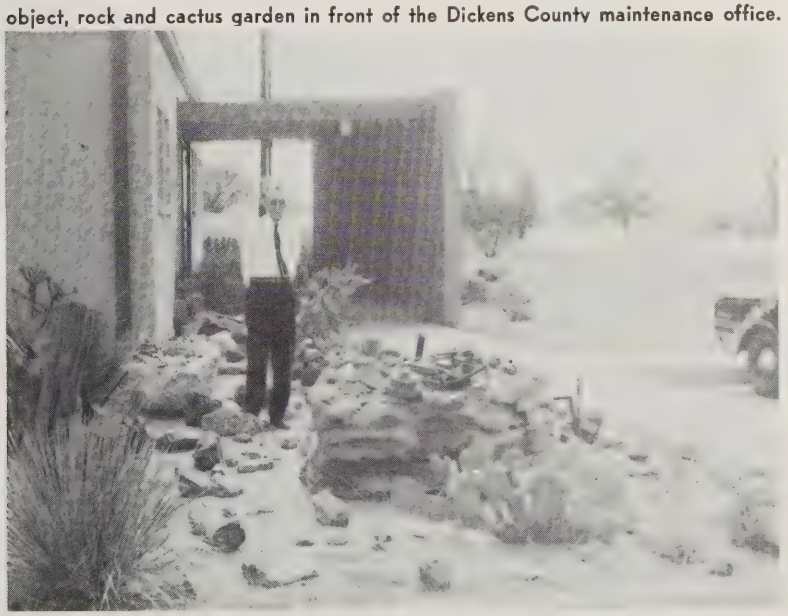
Among his rock and cactus he has placed such West-Texana as a buggy dashboard, a Jew's harp, a hubcap from an old Model T Ford, old pliers, knives, wrenches, parts of stirrups and saddles, and something that looks like a small rocket.

Cumbie has one rock that looks like a turtle and another that would almost pass for a duck.

The maintenance foreman went to work for the Department in 1928 in Lubbock. The next year he transferred to Dickens and has been there ever since.

Cumbie's enthusiasm for collection has become infectious. Other men in the section and local residents now bring in rocks and other items to add to his display. ■

MASTER OF ALL HE SURVEYS—John Cumbie stands in the middle of his odd-object, rock and cactus garden in front of the Dickens County maintenance office.



BREAKAWAY LIGHT STANDARDS PASS THE TEST!

TEXAS' FIRST "breakaway" light standard has broken away. On October 10, one month after installation of breakaway light poles in District 14, the first opportunity for them to prove their worth occurred when a tractor truck hauling a load of mattresses ran afoul of light standard 232 on Interstate 35 in San Marcos.

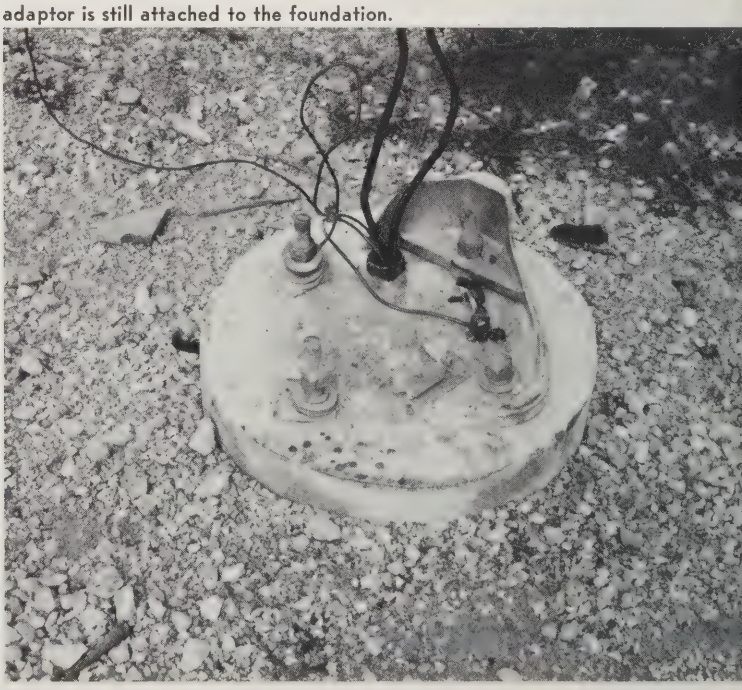
The driver was not injured. The truck was slightly damaged, but was able to continue on to Corpus Christi to deliver the mattresses.

Performing as promised, the light standard, which weighs about 600 pounds, broke away leaving the concrete base intact. There was more damage to the standard than would be expected by its designers had it been hit by an automobile, because the top of the trailer bent the pole.

A more definitive test of the breakaway light standard came two weeks later when a small foreign-made automobile veered off a frontage road and struck another standard not far from the scene of the truck mishap.

Again, the driver was uninjured and damage to the car was slight. The light standard was not damaged except for the sheared-off adaptor, and it had been re-erected by the following morning.

Breakaway light standard that was broken away by colliding truck. The cast aluminum adaptor shattered, leaving the concrete foundation undamaged (right). Driver was not injured. A portion of the cast aluminum adaptor is still attached to the foundation.



In contrast, an automobile was completely demolished and its woman driver hospitalized with injuries following a similar encounter with a light standard on the same highway about one month earlier. Highway patrolmen investigating the accident believe only her fastened seat belt saved her life. Why the difference? The first accident occurred before the breakaway adaptors were installed—and was the incident that prompted District 14 engineers to go ahead immediately with the project.

Cast aluminum adaptors installed on the steel transformer bases of light standards are an outgrowth of experience with aluminum transformer bases. After aluminum units were supplied as alternates in bids on new highway lighting work several years ago, engineers found they afforded a built-in safety bonus. Unlike steel, the aluminum transformer bases shear on impact. Force of collision then thrusts the pole and base up and away from the vehicle, and the car can roll to a controlled stop.

Damage to vehicles and injuries to occupants involved in collisions with aluminum units were only a fraction of the carnage experienced in smashups with steel transformer base installations. As a result, the Highway Department

Latest incident involving a breakaway light standard also involved a small foreign-made auto (below). The VW lost a little paint and gained a few dents when it struck the standard at San Marcos. The pole, a portion of which is shown above, gained a little paint and lost only its luminaire. The breakaway adaptor sheared off at its joint with the steel transformer base.

A woman driver fell asleep at the wheel on I.H. 35 near San Marcos and drove into an old-type light standard. Result: Driver hospitalized, automobile demolished, lighting installation a total loss, including concrete foundation (below), and District 14 decided to install breakaway adaptors.

three years ago made aluminum transformer bases mandatory.

Still in place, however, were 4,337 steel transformer boxes and 705 shoe base mounts on urban freeways of the state. These continued to be potential death-dealing factors since run-off-the road accidents account for almost one third of all traffic deaths in the United States.

Because the old style mountings represented a heavy investment of taxpayer's money, the Highway Department sought a way to make the steel bases safer and to avoid the expense of replacing them entirely.

Albert Ratliff of Highway Design Division suggested installing a shear linkage in the units—the cast aluminum adaptor. It is mounted on the concrete foundation and the steel transformer base is then replaced on top of the adaptor. On impact, the adaptor shears in the same manner as the cast aluminum base mounting.

Extensive testing of the breakaway adaptors was conducted by researchers at Texas Transportation Institute at Texas A&M University, before their installation in District 14.

Spurred by a rash of vehicle-light standard collisions, District 14 in October completed adapting all 309 old-type standards to the breakaway type. Other districts have taken a "wait and see" attitude, but several have programs to replace the entire steel bases of their standards with aluminum bases. While this will be more expensive than using the adaptors, engineers believe this type installation will cause less damage to colliding vehicles.

The Texas Highway Department adaptor received additional recognition later in October when the U. S. Bureau of Public Roads removed it from an "experimental" classification. This action gives highway departments throughout the nation the green light to install the adaptors on federal aid projects.

The breakaway light standard is a part of the Highway Departments' continuing program of highway safety research. Texas is one of the few states in the nation that spends as much as $1 million a year for research aimed at making highway facilities safer. ■

AWARDS

(As of December 31, 1966)

40 Years

District 11
John H. Beaty, Skilled Laborer

District 19
Seth W. Thigpen, Maintenance Construction Foreman III

35 Years

Accounting Division
Ray S. Boies, Assistant Fiscal Officer

District 10
Ernest Long, Skilled Laborer

District 19
Jack H. Gibbons, Maintenance Construction Foreman III

30 Years

Planning Survey Division
Joseph R. Mitchell, Draftsman III

District 5
Hester G. McDonnell, Maintenance Construction Foreman III

District 6
Henry M. Shannon, Engineering Aide IV
Archie J. Sherrod, District Engineer

District 7
Floyd G. Potter, Skilled Laborer

District 8
Cecil A. Conklin, Maintenance Construction Superintendent

District 9
Walton A. Ward, Skilled Laborer

District 14
Jefferson E. Roberts, Skilled Laborer

25 Years

District 1
Bob B. Baker, Designing Engineer

District 2
Thomas E. Hooker, Engineering Aide IV

District 4
Lloyd L. Holland, Maintenance Construction Foreman III

District 9
James P. Ledbetter, Supervising Resident Engineer

District 10
Bruce A. Raley, Materials Analyst III

District 11
Horace Bond, Semi-Skilled Laborer

District 12
John S. Brown Jr., Maintenance Construction Superintendent

District 16
Emery I. Cross, Engineering Aide IV

District 25
Floyd E. Page, Draftsman III

RETIREMENTS

Equipment and Procurement Division
John E. Lock, Warehouse Supervisor

District 1
Joseph L. Soward, Engineering Assistant I

District 2
Roy F. Lane, Skilled Laborer

District 5
George L. Birdwell, Watchman III

District 7
Earl Key, Skilled Laborer

District 8
John W. Harris, Skilled Laborer

District 11
Roy Beaty, Skilled Laborer

District 12
John W. Long, Skilled Laborer
Thomas B. Morris, Engineering Technician V

District 13
Elmar F. Reinhard, Semi-Skilled Laborer

District 15
Edward C. Williams, Skilled Laborer

District 18
Millard B. Kimberlin, Accountant III

District 19
Conway S. Clinkscales, Semi-Skilled Laborer

District 23
Joe T. Tinney, Skilled Laborer

District 24
Lorenzo D. Quintana, Semi-Skilled Laborer

District 25
Marshall A. DeShazo, Skilled Laborer

NEW BRIDGE Across Copano

"I would like to buy too much right of way and build a bridge too wide before I retire," District Engineer Travis Long said at the Copano Bay Causeway dedication on November 8. But, he added, he has not yet done so. Long has said in the past that the new causeway is already too narrow.

Located north of Corpus Christi on Copano Bay, the new bridge was opened to traffic October 20.

At the dedication ceremonies, the bridge was named the Lyndon B. Johnson Causeway by Rockport officials.

State Highway 35 crosses Copano Bay on a new 30-foot wide bridge. Note the raised portion of the bridge that has 50-foot clearance for water traffic.

Bay

Congressman John Young of Corpus Christi presented a plaque to Long, who was representing Highway Commission Chairman Herbert C. Petry Jr.

The plaque reads: "Copano Bay Causeway. Dedicated as the Lyndon B. Johnson Causeway in recognition of his untiring leadership in the effort to accomplish those things that will strengthen our defenses during time of war and will aid our prosperity in time of peace, as is exemplified by this project. Erected 1966."

President Johnson sent his regrets for being unable to attend the ceremonies. Young read a telegram from Governor John Connally expressing his regrets that prior commitments kept him from attending.

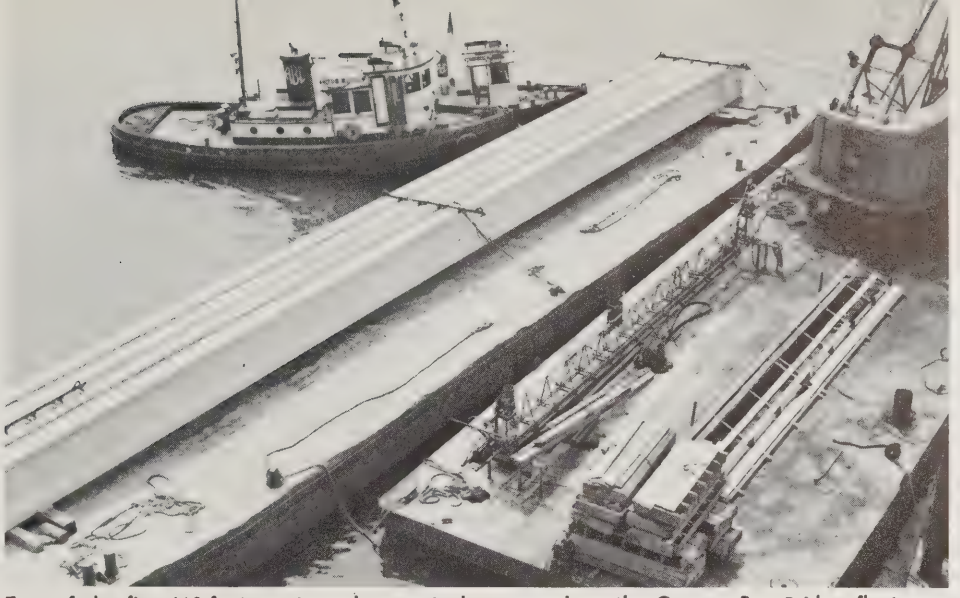
The 9,230-foot causeway has a "high rise" section 50 feet above the bay waters to let water traffic pass underneath without interrupting highway traffic on State Highway 35. The high rise section has a 75-foot horizontal clearance between bents to allow plenty of room for barges.

The new concrete and steel bridge replaces an old timber one built in 1931. Motorists on it were often delayed when the bascule span was raised for boats and barges moving up the bay. The lift span had to be tended 24 hours a day.

The old causeway was durable, sustaining relatively minor damage when Hurricane Carla struck in 1961. But it had to make way for progress and a higher bridge.

District Engineer Travis Long says that increased off shore oil drilling in and around Rockport in the past few years has caused a corresponding increase in both highway and water traffic. He expects the new causeway to facilitate the increasing flow of traffic over S. H. 35 to Padre Island National Seashore.

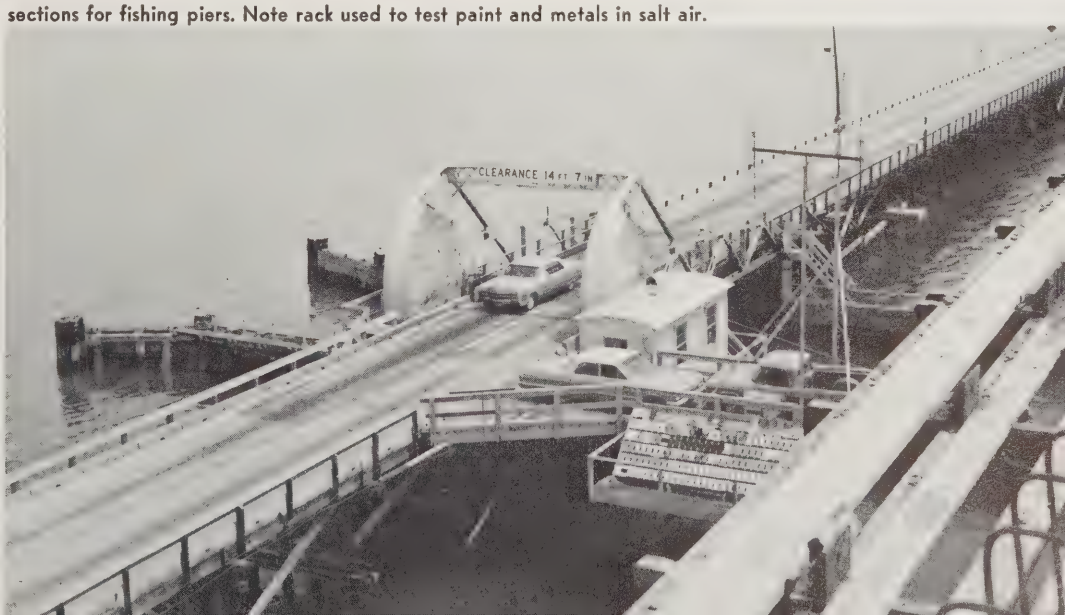
An extension of Aransas Bay lying



Four of the five 110-foot prestressed concrete beams used on the Copano Bay Bridge float on a barge waiting to be hoisted up 50 feet to span the navigation channel.

This is how the new Copano Bay Bridge looked last summer at the 50-foot high-rise section as the first 110-foot prestressed beam was lifted into place.

The bascule bridge, along with about 450 feet of the old bridge, will soon be removed, leaving two sections for fishing piers. Note rack used to test paint and metals in salt air.



west of the Aransas National Wildlife Refuge, Copano Bay is approximately six miles wide and 20 miles long. The bay derives its name from the Copanes Indians, a tribe of the nomadic, cannibalistic Karankawas.

Copano Bay at one time was a relatively important Texas seaport. It was one of the first official ports of entry to the Republic of Texas, so designated in 1835 by the General Council of San Felipe. At that time Copano had only an old Spanish customs house on the beach and a large water tank to supply ships coming into the harbor.

In 1836, Seth Ballou established a ferry across the bay at the present bridge site. However, he was forced to evacuate it a short time later because of the Texas fight for independence.

The harbor was a principal port of the Republic, the United States, and the Confederacy until the end of the Civil War. The port continued to do a lively business in tallow and hides for a few years. In 1869, the town of Copano was unsuccessful in its bid for the county seat, losing out to Rockport, and by 1880 the last citizen moved out, leaving the town to the elements.

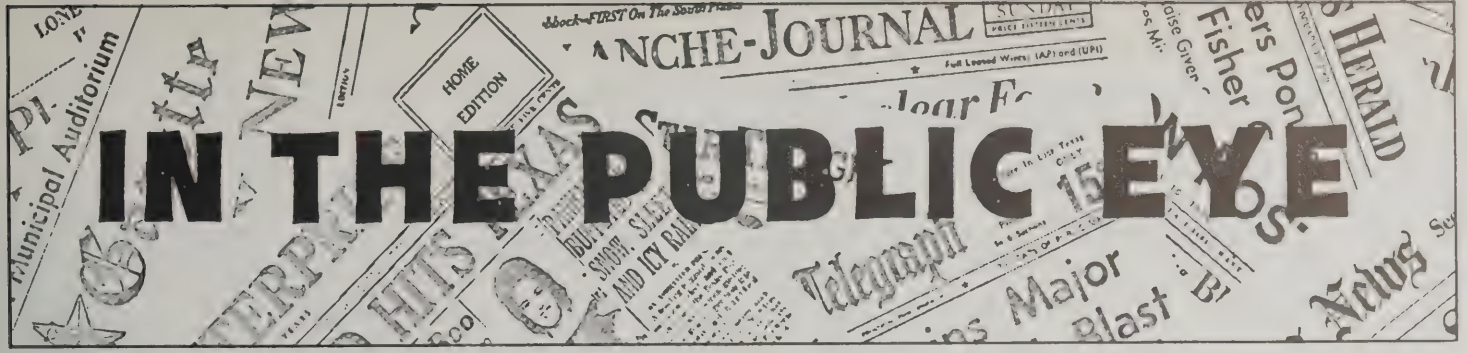
The new Copano Bay Causeway was built by the Austin Bridge Company of Dallas at a cost of $2,481,078 in 480 working days. The whole project, including approaches, is 2.5 miles long and was begun in February 1964.

A Vulcan 014 single acting steam hammer with a 14,000-pound ram, the largest ever used in District 16, was used to drive all the 18-inch square prestressed concrete piling. The three-foot stroke hammer used a nine-inch cushion to reduce shock waves created in the piling because of unusual soil conditions and extra long piling. The longest pile driven without a build-up was 104 feet. One pile had a 10-foot build-up and was driven to minus 106-foot tip elevation.

About 500 feet, including the bascule span, will be removed from the old causeway, and the remaining sections will be converted to fishing piers by the Parks and Wildlife Department. ■

Travis Long tells dedication crowd how new Copano Bay Bridge will help carry the expected influx of motorists to the Padre Island National Seashore.

Congressman John Young, left, proudly presents a bronze plaque to District Engineer Travis Long, naming the Copano Bay Causeway in honor of President Lyndon B. Johnson. The plaque will be mounted on a concrete post near the south end of the bridge.



THAT'LL BE THE DAY

Dallas Morning News has a question—"A real gee-whizzer for those skeptics who refuse to believe that government can do everything is contained in a recent capital press release, which says:

" 'When the Interstate Highway System is completed in 1972, the motorists will be able to drive from the Atlantic Coast to the Pacific Coast and from the Mexican border to the Canadian border without stopping for anything.

"This eye-popper, quoted by the Insider's Newsletter, indicates that Congress intends to legislate revolutionary design improvements, not only in highways and cars but also in motorists.

"If the federal government makes good on this promise, not even the most cynical conservative can fail to be impressed. However, there is one point on which the government press agent left some doubt:

"Does the guarantee of coast-to-coast driving without any stops apply also for motorists who have small children?"

FM 700 LOOP COMPLETED

Big Spring Herald reports—"FM 700 North, which has been under construction since December 27, 1965, is within a few days of completion, according to Joe H. Smoot, resident engineer for the Highway Department.

"The half-million dollar strip of road extending south and east from S.H. 350 to FM 700 intersection with I.H. 20, covers 2.778 miles.

"The road will afford a convenient feed-in from S.H. 350 and from Gail Road to I.H. 20 and along the present FM 700 an easy route to U.S. 87 south of town.

"Completion of the new strip of FM 700 will fit in well with plans which are well along for rebuilding FM 700 from Goliad Street west to U.S. 80 near Webb Air Force Base. This project, tentatively slated for contract in November, will completely rebuild the west end of the present road and redesign the route from a point near the National Guard Armory northwest to rejoin U.S. 80. A major structure over U.S. 87 to expedite safe handling of traffic at this point is included."

FIFTEEN-YEAR PROJECT COMPLETE

Houston Post announces—"A highway project which was nearly 15 years in planning and construction opened to traffic October 19.

"Known as the North Prong, the massive project encompasses 52½ acres of land in northwest Beaumont and includes an interchange of Interstate Highway 10 and U.S. 69-96-287 as well as a new section of the U.S. highway from the interchange north."

HIGHWAY OPEN IN HALLSVILLE

Fort Worth Star-Telegram reports—"Ceremonies for the formal opening of Interstate 20 in Hallsville have been scheduled for November 3. The dedication will mark completion of two sections between SH 43 and FM 450.

"Gilbert Youngs, district highway engineer from Atlanta, will speak and cut a ribbon to open the highway for traffic east to Shreveport."

HIGHWAY FORESIGHT

Lubbock Avalanche-Journal comments—"A good example of the necessity, and the value, of looking ahead on highway construction occurred here Tuesday (October 25).

"At dedication ceremonies marking completion of frontage roads for Loop 289, Congressman George H. Mahon stressed the importance of pressing ahead on the building of every possible stretch of four-lane highway. One of the area's great goals is designation of two broad Interstate Highways through Lubbock, one of the present Highway 87 route from the Gulf into New Mexico and the other a highway from El Paso to Oklahoma City.

"The completion of these routes into what well might be described as 'Interstate Expressways' would add further to the sparkling gem which is the Texas Highway System, best in the nation. The need for them is unquestioned. It is recognized by the Texas Highway Commission and that wizard of roadbuilders, State Highway Engineer Dewitt Greer. That 'they are coming' there can be no reasonable doubt. That they will come quickly is a reasonable desire.

"Meanwhile, work is to continue on the main lanes of the Loop. As the sections are completed, they will provide strong encouragement to industrial development on the city's perimeter."

TEMPLE ELEVATED FREEWAY

Temple Telegram announces—"The proposed elevated freeway in Temple has been stamped RUSH at the Texas Highway Department district office.

"Right now the Department is shooting for a January bid-letting date.

"From the looks of the hustle and bustle at the district office, they'll make it. Last week, all 17 members in the drafting department of the district office were devoting full time to the plans and specifications on the elevated section.

"The section of I.H. 35 the Department is working on runs 2½ miles from just north of the Adams Avenue interchange to a point south of the proposed South Loop bridge.

"This is part of the over-all plan to bring I.H. 35 up to Interstate standards from north of Temple to south of Belton—a distance of 11 miles.

"The elevated portion on South General Bruce Drive in Temple was chosen to be first because the Highway Department feels it is the most hazardous."

HAPPY HUNTING TO HARRY HOPKINS

Hopkins' corncob pipe and turned down hat were always with him on the job.

"TIME continues to pass and as a result it has again overtaken one of our fine employes," wrote District Engineer Travis Long in a memorandum to District 16 personnel. "It is with a great deal of regret that I must announce the retirement of Mr. Harry J. Hopkins, the Kentucky Gentleman."

The "Kentucky Gentleman," Supervising Resident Engineer Harry J. Hopkins of "Hopkins' Residency" in District 16, retired October 31 after 19 years and four months of outstanding service with the Texas Highway Department. The colorful man with the gray mustache, gray hair parted in the middle, steel-rimmed glasses and corncob pipe has reached retirement age.

Hopkins is an engineer of the old breed, and he thoroughly enjoyed the supervision of construction work. He dressed the part—always in field boots and a hat with the brim turned down (genuine Panama in the summer, felt in the winter), and smoking a corncob pipe filled with the world's strongest Kentucky tobacco.

Typical Hopkins' sayings are "Has everyone gone nuts?", speaking of the high cost of the new concepts of highway design; and when explaining the problem of drainage in flat country, "Put it on a naught-naught grade and then flatten it out." "Everything but information," he would mutter when essential data was missing on a set of plans. He has an exceptionally low speaking voice, as anyone can testify who has tried to hear his instructions on a construction job with the noise of heavy equipment in the background.

Harry Hopkins has a heart of gold and is well liked by all his associates. One of his chief assets is his careful study of each problem before reaching a decision. He spent long hours on the job, often being the first to go to work and the last to leave. Several times his employes had to point out to him that it was the moon he was looking at, not the sun.

But he was never too busy to talk "guns," or to pet a dog.

Hopkins will be kept busy during his retirement training "Tex."

The Harry Hopkins Trophy, an annual award named in honor of the Highway Department engineer, was presented to its namesake by the San Antonio Big Bore Rifle Club for his outstanding contributions to the sport of rifle marksmanship and competitive shooting.

Harry Hopkins greets "Tex," alias "Lou," as District 16 well-wishers smile broadly. They are Richard Terry (behind Hopkins), Everett Perkins, Don Skewis (Hopkins' successor) and Bill Crawford.

No story about Harry Hopkins would be complete without some mention of his guns and marksmanship. His contributions to the sport of competitive shooting were recognized by the San Antonio Big Bore Rifle Club at Camp Bullis when they named an award in his honor, the Harry Hopkins Trophy. The award is presented annually to the winner of the National Long Range Course "A" at Camp Bullis. The first two years it was presented, 1962 and 1963, the winner set new national records.

Hopkins started by hunting ground hogs in his native state of Kentucky and by competing in rifle and pistol meets in Louisville. He has several boxes of medals, a closetful of guns, and a scrapbook of clippings to prove his prowess. He was captain of the Kentucky and later the Texas Civilian Teams at the National Matches at Camp Perry, Ohio, for many years. He placed eleventh among civilians at the National Matches in 1957. Exactly 20 years before he had placed 25th.

An official referee for the National Rifle Association of America, Hopkins is a Life Member of the NRA. He is also a Life Member and honorary president of the San Antonio Club. Hopkins has helped organize several pistol and rifle clubs in the Corpus Christi and Robstown areas, and has coached and refereed at matches all over South Texas.

Knowing that Hopkins planned to "catch up on his hunting" when he retired, his associates at a retirement party on October 7 gave him a truly appropriate gift—a female German Shorthaired Pointer complete with doghouse and pen. Hopkins immediately changed her name from "Lou" to "Tex" in honor of his many friends at the Texas Highway Department. Training her and hunting with her should keep Hopkins pretty well occupied during his retirement.

Hopkins' nickname stems from the fact that he was born in Louisville, studied engineering at the University of Kentucky, and worked for the Kentucky Highway Department for three years. For 15 years he was an assistant engineer for the Commissioner of Sewage in Louisville. Heading west, Hopkins was an engineer for DuPont in the State of Washington for five years and then moved to Corpus Christi and the Sinclair Refining Company. After another year as a self-employed civil engineer in the Victoria-Corpus Christi area, he found his "home" with the Texas Highway Department in 1947. Hopkins is a member of the Texas, Kentucky, and National Societies of Professional Engineers, and is an active member of the American Society of Military Engineers.

The parents of one son, Hopkins and his wife are anxiously awaiting the birth of their first grandchild.

Mr. Hopkins will truly be missed by all who worked with him. We wish him well, and good hunting. ■

By James W. Johnson, Engineering Technician V
Corpus Christi, District 16

YOU COULD DO ANYTHING IN A WAGONYARD

And Your Grandpappy Did!

By Carol Nation
Texas State Historical Survey Committee

The forerunner of today's motel—a wagonyard in Canyon near the turn of the century.

Photograph courtesy the *Canyon News*

A colorful phase of early Texas transportation was the era of the wagonyard. To commemorate these pioneer days, the Texas State Historical Survey Committee has erected an official Texas Historical Marker at the intersection of U.S. 90 and 83 in Uvalde.

TWILIGHT DESCENDED upon the Panhandle wagonyard as travelers spending the night there went about their evening chores of cooking supper over fires, feeding the stock, and unrolling bedrolls. One man played his violin, and the sweet strains of music wafted above the eventide bustle, making a lifetime imprint on the memory of a youth who listened.

"He played 'Listen to the Mocking Bird,'" reminisced 86-year-old L. A. Donnell of Canyon. "I had never heard the tune before. But I can still see that old man and hear that tune."

Donnell was about 20 at the time. He had come to Canyon from his home in Silverton 60 miles away to pick up supplies at the railroad. Like many travelers, he spent the night at the wagonyard—the forerunner of today's motels.

Wagonyards were block-size, fenced-in areas with stalls and sheds that provided shelter for drivers, teams and wagons. Most of their customers were farmers and freighters.

In a *Canyon News* feature last year, Donnell recalled other experiences at the Shotwell Wagon Yard. When Donnell was threatened with being stranded with two wagons and three horses because the fourth horse lay dying, a stranger at the wagonyard saved the ailing bay mare from death by dripping four ounces of chloroform down her throat.

The wagonyards were both motels and social centers. Drivers found space for cooking, sleeping and tending their animals. Men and families might stay for weeks while waiting for kin or goods coming by train or stage. Frequently the yards were stops for stagecoaches and freighters.

Wagonyard life was vividly active, with practical jokes, gossip, games such as mumblety-peg, fiddle, guitar and harmonica music, dancing, roller skating, fist fights, veterinarian aid, livestock buying, selling and trading, the ringing of blacksmiths' anvils, stud service, job, weather, crop and animal talk, trading of goods, and sometimes wagering.

Today's tourist probably would regard the wagonyards as a hardship. But many pioneer Texans considered them a luxury, because if there were no wagonyard, they had to camp by a stream. A driver would pull in, unhitch the horses and put them in a stall, push the wagon under the shed, and spread out blankets in the wagon—or under it—for a night's sleep. Some yards did not have stalls and sheds, but had a type of centralized bunkhouse instead where families might find shelter.

The yards were operated by the city, by individuals as a business, or by merchants who did not charge their own customers. Charges ranged from 25 cents to a dollar a night, with an extra charge for the use of stoves or feed for stock.

Many oldtimers remember the wagonyards fondly, because for a century the yards were the heartbeat of communities throughout Texas. Every county had at least one, and larger cities might have two or a dozen. They were operated from about 1821 to 1921, when they were driven out of business by the advent of the automobile.

Dr. Rupert N. Richardson, of the history department of Hardin-Simmons University at Abilene and a member of the Texas State Historical Survey Committee, makes the distinction between wagonyards and livery stables:

"The proprietor of a wagonyard might do a little livery stable business; that is, rent rigs as cars are rented today," Dr. Richardson said. "The wagonyard managers of the places where I stayed—and I spent many a night at a wagonyard in Ranger or Graham—did little or no renting of conveyances.

"The livery stable supplied conveyances for hire, and might take in outfits from the country or other towns. But the rank and file of men who patronized livery stables stayed at hotels and picked up their rigs as we today pick up cars.

"Perhaps the best customers of livery stables were the traveling salesmen, uniformly called drummers. The best customers of wagonyards were farmers and occasionally a cattleman, although the cattlemen usually felt impelled to leave their outfits at the wagonyard and spend the night at the hotel."

To commemorate early Texas wagonyards, the Texas State Historical Survey Committee erected an official Texas Historical Marker at Uvalde in October. The marker is sponsored by the Moody Foundation of Galveston, which donated $10,000 to the Texas Historical Foundation for markers denoting historical sites concerning early travel, transportation and communications in Texas. The Texas Historical Foundation is the private affiliate of the Texas State Historical Survey Committee.

The wagonyard marker at Uvalde is located at the intersection of U. S. 90 and 83 in the center of town. The spot is one block from the wagonyard once operated by the F. A. Piper Company along with a general store. Horner's Store stands there now ... same store, new name. Many other wagonyards were replaced by parking lots, service stations, buildings, and motels.

A Colorado City old-timer once recalled that during an automobile trip to California, he and his family were turned away from wagonyards because their Ford frightened the horses. Indignant, the man returned home and established a "wagonyard" for automobiles. ■

all the way with TCA

BERMUDAGRASS is a valuable plant for erosion control on the right of way and its slopes, but maintenance men despair over its ability to thrive in asphalt pavements.

The widespread use of paved shoulders has intensified this problem. Existing base material is generally used to support the shoulder pavement, and plant remnants within the base grow, penetrate the asphalt surface, and cause early deterioration. Pavements costing from $3,000 to $20,000 a mile and having a life expectancy of 20 years can be damaged so greatly by invading plants that replacement is necessary as soon as three years after paving.

Research on this problem was initiated at Texas Transportation Institute (with the Texas Agricultural Experiment Station) in 1959 by the Texas Highway Department. The U. S. Bureau of Public Roads joined the cooperative effort in 1962. One of the objectives of the research was to adapt recommended chemical methods of plant control to highway requirements, and to investigate other plant control techniques that might apply to certain highway vegetation control problems.

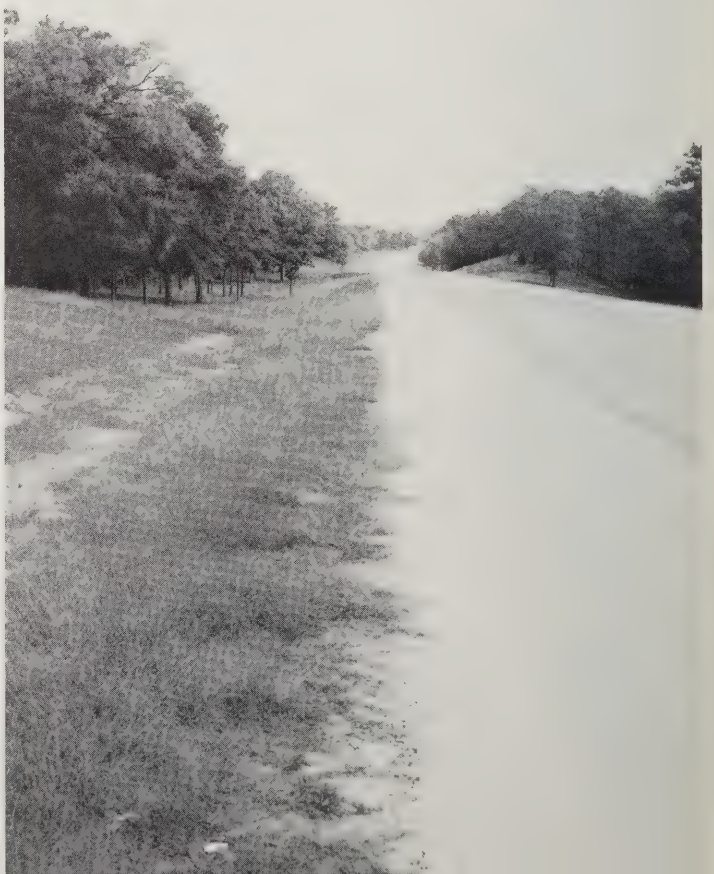
In Research Report 13-3 (Final), "Vegetation Control on Texas Highways," Dr. Wayne G. McCully and William J. Bowmer make suggestions for using sodium TCA (trichloroacetic acid) to control bermudagrass in asphalt pavement.

As a presurface treatment, sodium TCA should be applied just ahead of the prime coat. Any brooming of the surface of the base should be done before rather than after placement of the herbicide. Following the application of the sodium TCA, the surface of the base material should not be worked further before sealing. The recommended rate of application is 24 pounds per foot-mile, and one application is sufficient.

Post-paving applications of sodium TCA also proved effective, but more than one treatment is necessary. In this instance an application using 24 pounds per foot-mile should be made as soon as bermudagrass begins to grow in the spring, and a subsequent treatment should be made when regrowth occurs, usually about 30 days later. Then additional spot applications using one pound of sodium TCA per gallon of water may be necessary to control dense stands of plants.

Infestation of paved shoulder along U.S. 183 north of Gonzales. Primary vegetation is bermudagrass.

Six months after presurface application of 24 pounds per foot-mile of sodium TCA, on the shoulder of S.H. 31 west of Tyler.



Watering truck fitted with a pump to maintain constant pressure gives a uniform presurface application of TCA solution. The material should be applied so that it covers the joint between the pavement and the shoulder.

Photographs courtesy Texas Transportation Institute

Application of sodium TCA to a paved shoulder overgrown with bermudagrass and other plants on I.H. 45 south of Dallas. This sprayer unit developed by the Highway Department uses a water tank as a herbicide container and includes a pump, pressure regulator, a bypass, and a boom with nozzles for distribution of the spray solution.

Not less than one gallon of water should be used to dissolve each pound of sodium TCA. This is near the limit of TCA solubility, but larger volumes of water should be used only to facilitate application.

Dirt and other debris on the pavement surface should be removed by blading or sweeping and the bermudagrass permitted to resume growth before applying sodium TCA for best results with a postsurface treatment.

In a single test, the addition of a wetting agent did not increase the effectiveness of a water solution of TCA applied as a postsurface treatment.

Application should not be made at speeds greater than 15 mph, nor when wind velocities exceed 10 mph.

Although TCA is marketed as sodium salt, liquid acid, and as an ester formulation, equivalent amounts of TCA are needed to achieve the same degree of control. The form to be used should be selected on the basis of cost per TCA equivalent. The sodium salt and ester forms are more commonly available and more easily stored. Present market price favors the sodium salt.

Many other plants are also readily controlled with sodium TCA if treated during the seedling stage of growth. However, as with any herbicide, the susceptibility varies, and sodium TCA should not be expected to kill all plants.

Other materials such as fenac have increased the effectiveness of sodium TCA to a degree, but the additional cost has not offset the use of another increment of TCA.

Sodium TCA is corrosive to many metals. Corrosion can be controlled by flushing with water and applying an oil coating to spraying equipment whenever use of the equipment is suspended.

Sodium TCA may irritate the skin of some persons, but it is not dangerous. Ordinary sanitary procedures should be followed by personnel handling the chemical. ■

To and From Our Readers

Award of Merit

NATIONAL SAFETY COUNCIL has recognized the Texas Highway Department's outstanding 1965 safety record with an "Award of Merit," second highest award made by the Council each year. The Department has now received four such awards, and in addition received the coveted "Award of Honor," the top award for exceptional safety records, in 1953 and 1958.

Texas compares favorably with the 24 other state highway departments reporting to the National Safety Council. The average frequency rate of accidents among the departments reporting in 1965 was 12.19 lost-time injuries for every million man hours worked. The frequency rate for the Texas Highway Department was less than half, 5.18.

The Texas Department also had a 24 per cent lower rate of lost-time days charged to accidents than the average of the 25 reporting highway departments.

Award for Conservation

The Highway Department's work in soil conservation was recognized by the Association of Texas Soil and Water Conservation Districts at their meeting in Austin October 12 and 13.

Engineer of Maintenance Roger Spencer accepted a plaque on behalf of the Department at the Association's banquet on October 12. A. L. Bading, executive director of the Association made the presentation, citing the Department's "outstanding cooperation with soil conservation agencies" in matters of mutual concern and its efforts for beautification.

Governor John Connally was the speaker at the banquet.

Get a Horse!

As far back as 1908 farsighted thinkers recognized the automobile as a dangerous threat to the safety of society. To prove just how concerned they were in providing adequate traffic regulations, here are three that were passed at that time:

1. On discovering an approaching team, the automobilist must stop off the side of the road and cover his machine with a tarpaulin painted to correspond with the scenery.

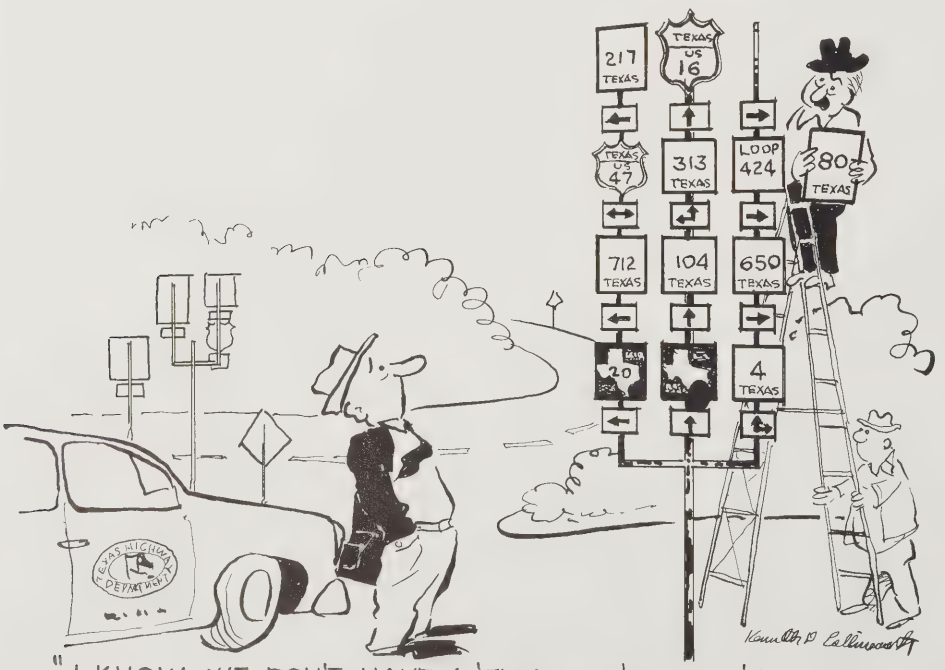
2. In case a horse will not pass an automobile notwithstanding the scenic tarpaulin, the automobilist will take his machine apart as rapidly as possible and conceal the parts in the grass.

3. Automobilists running on a country road at night must send up a red rocket every mile and wait ten minutes for the road to clear. They may then proceed carefully blowing their horns and shooting Roman candles.

District 11 Administrative Engineer W. B. Stockton sent in this photograph of Highway Department resident engineers and maintenance foreman's office in Livingston, selected by the Polk County Garden Club as Livingston's "Yard of the Month." Credit for the colorful candlestick flowers and zinnias that surround the offices and shops goes to Cecil Lindsay, yard maintenance man.

All in Good Fun

Cartoonist Kenneth Collinsworth gets a lot of mileage out of his bleeding



"I KNOW WE DON'T HAVE A 'TEXAS 80' BUT IT'LL HELP BALANCE UP THE SIGN . . . . AND BESIDES. . . . NO ONE WILL KNOW THE DIFFERENCE."

TEXAS HIGHWAY COMMISSION

HERBERT C. PETRY JR.	Chairman
HAL WOODWARD	Member
J. H. KULTGEN	Member
D. C. GREER	State Highway Engineer

Texas Highways

TEXAS HIGHWAYS, official journal of the Texas Highway Department, is published in the interest of highway development in Texas and for departmental education in construction, maintenance, and operation.

TEXAS HIGHWAYS is available to the general public on a subscription basis at $4.50 annually, or it can be purchased for 40 cents a copy. Subscriptions, inquiries, material, or manuscripts should be directed to the Editorial Office, Travel and Information Division, Texas Highway Department, Austin, Texas, 78701 •

"old 64." (See November 1966 issue for latest example.)

But now we find there really is an "old 64"—State Highway 64 from Tyler to Wills Point. So we just want to say that it is a very good highway; hasn't bled in years. And let's scotch the nasty rumor right now that District 10 maintenance men use three times as much gravel as anyone else.

Send Money

No, don't. Send old pictures and anecdotes about the Highway Department and its employes.

Next year the Department celebrates its 50th Anniversary, and it will be a year to remember—if we all remember to do our part now.

Address all contributions to Travel and Information Division, Texas Highway Department, Austin, 78701.

"Land of Contrast" Gets Around

"Texas—Land of Contrast," the first full-color travel promotion film produced entirely by a state agency, is now being distributed nationwide.

Modern Talking Picture Service Inc. of Chicago will receive prints of the film and will solicit its showing on television stations throughout the United States.

Produced to stimulate recreational travel in Texas, the film received statewide acclaim when first shown in 1965. It is available on a loan basis to service clubs, chambers of commerce, and other organizations. Bookings may be arranged through the Texas Highway Department, P.O. Box 5064, Austin, Texas 78703.

Terraqueous Transportation

General Thomas Jefferson Chambers, a controversial Texan who was a lawyer, soldier, surveyor, and four-time loser for governor, hoped to be Texas' most ambitious road builder, also, Weldon Hart reports in the July 1966 issue of the TGRA Newsletter. Chambers owned 35,500 acres in an 1835 Mexican land grant, including all of present day Austin.

He planned to build a 4,000-mile road on a 300-foot right of way, and had a state charter for the "Chambers Terraqueous Transportation Company" (1854) as his authority. Chambers invented an amphibious vehicle that would run over land, rivers, lakes, and bays so he would not have to build any bridges.

However, war and death intervened (an assassin's bullet found him one night in 1865 at his home in Chambers County as he sat holding his six-months old daughter on his lap), and his ambitious highway project never got off the ground.

Incidentally, that same daughter, Mrs. Stella MacDonald, and another, Mrs. Kate Sturgis, finally won their 50-year old argument with the State and in 1925 were awarded $20,000 for the land on which the Capitol stands, land that was part of their father's 1835 grant.

Our Face Is Red

No, Virginia, there are no fir trees in Texas.

Trees on the cover of the October issue of TEXAS HIGHWAYS were erroneously identified as fir trees by a damyankee of a caption writer who has since been transferred.

Many of our readers helpfully pointed out our error, but retired Supervising Maintenance Engineer Ike Crutcher of Tyler worded it best:

"Many were the marvelous changes in East Texas I witnessed in my 40 years with the Highway Department. None of these changes, however, were nearly so miraculous as that I noted in 'About Our Cover' in your October issue.

"Indeed, I could have saved a recent 4,000-mile trip to Wyoming to fish for trout in the waters of the Madison, Firehole, Yellowstone and Wind Rivers had I but known that "fir trees" had replaced the short leaf and loblolly pines in Cherokee County. Where the fir grows aren't the streams cold enough for trout? To think I could have avoided that long drive and within a few miles of home cast my dry flies on the chill waters of the Angelina and Neches Rivers and filled my creel, perhaps, with brightly colored Rainbows, Cut-throats and Browns. Wonders never cease in Texas!"

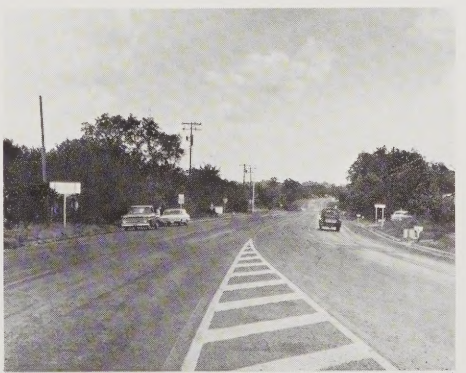
We'd like to tell you those evergreens on the October cover were pine trees, but now we're afraid to go out on a limb.

And Our Printer's Face Is Red

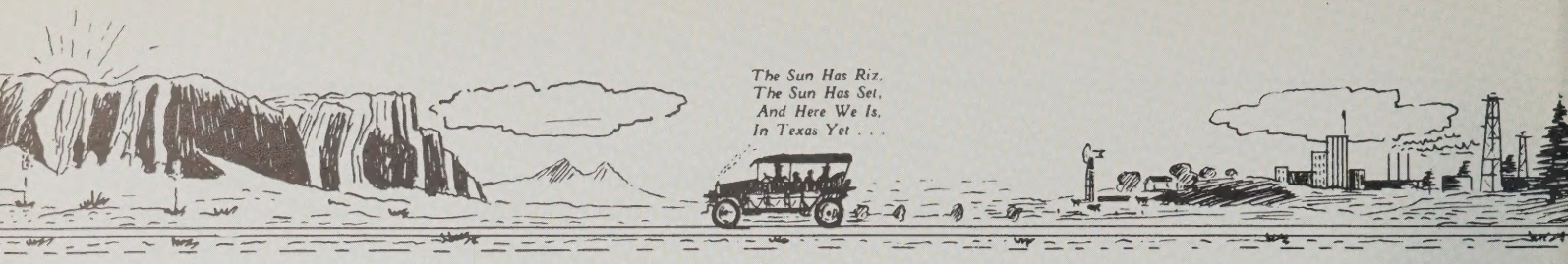
This time the error wasn't ours.

On pages 26 and 27 of the October TEXAS HIGHWAYS, the same photograph appears with two different captions. In case you've been hanging on tenterhooks for two months, let yourself down easy and note correctly captioned photographs below.

A major highway improvement in Kilgore in the past year was converting Laird Hill Road to four lanes. It carries heavy oilfield traffic for both S.H. 42 and S.H. 135 and is scheduled for a new surface later this year.



F.M. 2204 (Stone Road) was recently widened to four lanes, complete with curb and gutter, from its intersection with U.S. 259 eastward to the Kilgore city limits at Danville Road. The improved section gives easier access to a growing residential area and the Gregg County Airport.



OVER THE HIGHWAYS

Comments . . . from the Traveling Public

• I have visited Austin many times and always enjoy the quality and safety of your highways.

If I may, I would like to comment on your roadside rest areas. Most of the ones I have seen seem to have been built with the traveler in mind while others seem to be more of an ornamental nature than useful. Texas is not alone. I have found the same situation in every one of the original 48 states as I have traveled the highways of all of them.

There may be others, but there is one rest area in Texas that I would like to see copied by every state highway department. I'm referring to the large blacktopped area at the junction of U.S. 290 and S.H. 17. The area is large, providing a measure of privacy. The shelter houses are accessible. There is no need for a guest to park in a narrow roadway and carry his food in order to find a place to eat it. He can drive his car right up to a table.

Beauty spots along the highways are desirable, but I feel that roadside rest areas should be developed especially for the convenience of the traveler, not just for landscaping.

R. W. Branson
Keokuk, Iowa

• Would you please send me one of your Texas highway maps?

I have a 1964 map, which is just about worn out, since I do quite a bit of traveling in Texas. I find your map is more useful to me than the ones you get at gas stations since you have the whole state on one side. I like the inserts of the cities also. You will never know how much they are appreciated when you have no idea which direction you should go.

I would also like to say that I have never driven over such fine, well-kept highways, and I have driven over many. I came to Texas just about two years ago, and I drove from a little town in New York State.

When I crossed the line from Oklahoma I was very impressed by the wide shoulders and I certainly did appreciate the good highways. The worst roads in Texas can be compared with the best in most states.

Helen Dafeldecker
Temple

• Highway conditions were very good. Texas drivers appeared to adhere to traffic rules, especially in regard to speed, and no erratic driving was encountered during our recent trip in Texas.

You claim to have the eighth wonder of the world (the Astrodome). But you also have the ninth wonder. I was in it . . . six lanes of traffic trying to get through a two lane tunnel at quitting time (the Washburn Tunnel) at Houston.

All in all, we enjoyed driving in Texas. We could see a lot of foresight and planning in building the highways.

Mr. and Mrs. E. E. Joy
Wichita, Kansas

(The Washburn Tunnel is not part of the state highway system. The Highway Department is now planning a high-level bridge over the channel west of the tunnel.)

We have received many compliments lately on the aid given at the Tourist Information Bureaus maintained by the Highway Department at main points of entry into the state. Here are a few:

• Counselor at El Paso was so nice and friendly I almost decided to camp in the tourist office for a few days to get to know her better.

I felt at home in Texas. Thank you.

• Your tourist information centers at state lines should be imitated by all states. I use them nearly every trip to and across Texas. I've yet to ask for any information I didn't get in just a few minutes. The personnel I've found at the centers are the kind of folks I wish I came in contact with more often! They're wonderful.

• This was the first service area of this kind we have seen and it did add a note of welcome to our visit in Texas.

• Travel information in Texas was very helpful and not only courteous but generous!

• Your welcome station was very clean and the counselor was as helpful as he could have possibly been. Keep up the good work!

• Of all the states we traveled through, Texas showed the most interest in its tourists.

• I have been coming to Texas for 17 years. When I die I don't want to go to Heaven; I want to go to Texas.

A new section of Interstate 10 at Cibolo Creek southeast of Boerne features bridges on the frontage roads and a turnaround under the main lanes. Photograph by Blair Wilkins.

Bells of Capistrano still ring out, calling worshippers to the small chapel in San Antonio. The bells and cross of Mission San Juan Capistrano are appropriate symbols of Christmas in Texas, since the mission's history dates back to 1716 when Franciscan monks established it as the San Jose de los Nazonis Mission to bring the Christmas message to the Nazoni Indians of East Texas. The name was changed to honor a Franciscan friar from Capistrano, Italy, when the mission was moved to its present site on the San Antonio River in 1731.